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Some Aspects of Tuberculin Testing, with special reference to Synthetic Tuberculin*

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Different aspects of bovine tuberculosis have been discussed with almost monotonous regularity at veterinary meetings during the last two or three years. In spite of this, however, a paper on this subject usually guarantees a good audience and stimulates a bright discussion. This is probably due to the fact that we all inwardly and secretly believe ourselves to be in some degree authorities on the subject. Its definite importance and the frequency with which veterinary surgeons in all branches of our profession, except possibly those engaged in small-animal practices, encounter and have to deal with the condition is no doubt the primary cause of its never-decreasing popularity. It seems to be impossible for a group of veterinary surgeons, especially those engaged in country practices, to foregather for any length of time without the subject of tuberculin testing cropping up and thereafter monopolising the conversation. It is chiefly for this reason that I do not hesitate to offer for your approval or otherwise some observations on this matter. Let me say at once that I lay no claims to be an authority on tuberculin testing. I have, however, been fortunate enough during the past few years to carry out a large number of tests under various conditions and consequently I have encountered those difficulties so common to us all; from general observation during past experiences I have gathered certain impressions which I propose to convey to you.

I still have a lot to learn about tuberculin testing. The answering of farmers' constant "whys" and "wherefores" is still, in spite of a wide experience, often very difficult. The more testing I do, the more difficult does it seem sometimes to explain truthfully certain results. An explanation can usually be given which to the best of one's knowledge is possibly correct, but at the back of one's mind there lurks a thought that some other explanation is equally possible.

*Paper presented to the Southern Counties Division, N.V.M.A., at Southampton, December 11th, 1936.

Method of Applying the Double Intradermal Test

There is more tuberculin testing being done to-day than ever before, and although many of you are probably old hands at the task, there may be others whose actual experience is more limited. I hope it will not be considered an impertinence, therefore, if I venture to describe how I carry out the test. I take this liberty because I have the opportunity of seeing a large number of veterinary surgeons engaged in this operation and no two do it exactly alike. I make no suggestion that my method is in any way superior to others, but I have found it suitable and as yet I have seen no reason to alter my technique. At the same time I am quite anxious to receive any suggestion which will improve my method and so help me to arrive at a more accurate diagnosis. I believe that the method which one finds most comfortable is the best to apply and is the one which each individual should adopt.

I prefer an ordinary 1 c.c. "Record" syringe with a fairly short needle—10 mm. in length. Many people prefer a dental syringe, but personally I find this far too cumbersome and the needles far too fine. There are, of course, many syringes of all types on the market all supposed to be specially adapted for this work. I have tried several and seen others in use, but as yet have found none of them in any way superior to the ordinary plain syringe. With this instrument and the needles which I use, I can, if necessary, follow a fractious beast around a box with the needle and syringe in position and no fear of the needle breaking off inside the animal's skin. One needle usually lasts a long time and can be used for hundreds, and even thousands, of cattle.

The site I choose is one approximately in the middle of the neck. With a pair of slightly curved scissors I clip the hair from a very small area. I see no advantage in shaving and there are certain disadvantages, to which I will refer later. When animals are in short coat, I do not think it is necessary to clip at all. In Ayrshire, where I have done a large amount of

testing, it is often impossible to clip the animal's neck, as it is the fashion to keep the whole of the head and neck clipped. When using old tuberculin, the pea in the neck is easily found at the forty-eighth hour, but with synthetic tuberculin this is not always so easy and it is then that the small clipped mark assures one that the second dose is being administered in the right place. I pick up the fold of skin with the thumb and forefinger of the left hand in the usual manner and insert the needle, already mounted in the syringe, into the deep layers of skin. The plunger of the syringe is then in the palm of the right hand and at the same time the thumb and forefinger of this hand are gripping the mount of the needle. In this position I administer the dose of tuberculin, and should the animal shake its head or even walk away, I have the needle firmly and safely in place and can continue with the job without fear of it coming out or breaking off. All this is probably long-winded, but I mention it because it enables me to test at least 90 per cent. of the animals without their being held in any way. This is, of course, if they are tied up. In a "rough house" with young beasts I find the method excellent. To-day the yoke method of tying up animals in increasingly common. These yokes do not make testing easy, as one's fingers can so easily be trapped. I now make it a rule with animals so restrained to choose a site much further back on the neck; in fact, where the neck joins the shoulder. This spot is also selected with nervous, fidgety cows, as they can then shake their heads or jerk forwards without interfering with the injection. When estimating how long the testing of a herd is likely to take I usually allow one animal per minute, including the catching and injecting young animals. An average of 30 seconds per cow tied up should be ample if one is ordinarily active. It is a sound habit before testing always to wash out the syringe in hot water in the farmer's presence. This is really bluff, of course, as the syringe would already have been sterilised at home and after the first few minutes can hardly be regarded as clean. This simple precaution, however, prevents farmers declaring that their animals have reacted because a dirty syringe or needle was used. You will probably think that I am insulting your intelligence by mentioning such an obvious fact. I can assure you, however, that I have seen the test carried out without this precaution being taken, with the consequence mentioned. I do not apply spirit or disinfectant to the site of operation, but a bucket of hot water is a useful thing to have handy. I avoid testing herds in the summer months as far as possible, the reason being that I have had several tests, especially in the south of England, completely ruined by flies. For some unknown reason, these insects attack one or more and sometimes all the animals undergoing the test and the operation seat is swollen up and covered with a serous and scabby exudate. In the field, large numbers of flies can be seen on or around the area. I have previously mentioned that I do not shave an area of skin. One reason for this is that I have seen such places so badly attacked by flies that the whole area was a swollen, hot plaque covered with a solid scab.

As far as measuring the skin is concerned, I prefer the ordinary engineer's calipers to the variety usually seen in use. They are, in my experience, more easily applied and more convenient to handle; they never slip, are easily read and are certainly very accurate.

Finally, let me repeat that I do not even suggest that my methods are the best or even better than those used by others, but to anyone who is not entirely satisfied with his own method they might be worth a trial.

Interpretation of Results

This is the most important feature of tuberculin testing. I intend, however, to say very little about it because practical experience alone can teach us to interpret the results of this test. Moreover, I have little fresh to add to what has already been so often repeated, *viz.*, that it is the character and not the size of the reaction which is significant. One or two small points, however, I will mention.

I still occasionally experience the so-called doubtful reactor. I do not see how this can be otherwise. The dividing line between a positive and negative reaction must on occasion be very fine. We are frequently told that any deviation from the small, hard, characteristic, pea-like swelling of the typical negative reaction must be regarded as a positive reaction. Under certain circumstances this is quite practicable, but in general practice it is often not so straightforward. It is most disconcerting to reject an animal on these grounds and next to hear of it in another district and possibly standing in a tested herd for years after. It is realised that a big proportion of so-called doubtful reactors eventually become definite reactors, but not all. The history of the herd and the individual animal is sometimes of value when making one's decision or when advising the farmer. Any such animal should, whenever possible, be kept under observation and tested again after a short period.

There is one feature of a positive reaction which I do not see mentioned in various descriptions which are available, and in my opinion it is most useful. The positive diffuse swelling invariably grips the underlying tissue of the neck, whilst the negative pea- or bean-like swelling is free-moving and in no way adherent to the underlying tissue.

Ministry of Agriculture Method

As I expect you all know, the Ministry of Agriculture, under the Attested Herds Scheme, make a practice of testing in two places simultaneously, *viz.*, the usual site in the neck and the caudal fold. Until recently a third site, *viz.*, one of the lips of the vulva, was also used. The American method is the adoption of two inoculation sites, the caudal fold and the vulva, and not in the neck at all. In that country only one dose of tuberculin is administered and the readings are only taken at the seventy-second hour. At the moment I can see no advantage in using the caudal fold as a check and I can appreciate very considerable practical difficulties accompanying its use. In Scotland this method is not used under their Attested Herds Scheme, which is administered by the Department of Agriculture. Reliance is still placed on the double intradermal method in the neck only. Should the Ministry furnish statistics to show that they had obtained positive reactions to the caudal fold injection which were negative or indefinite in the neck and if these findings were confirmed on *post-mortem* examination, then naturally I should change my opinion. In the meantime I am content with the neck method only. The practical difficulties of doing the test at these two places are considerable and the time taken up when a lot of testing has to be got through has to be taken into consideration. I have frequently tested up to 400 animals myself in one forenoon and this was necessary to get through the work in hand. A week or two ago one of my assistants and I tested over 300 animals on one farm in a morning and we had to catch and hold most of them for each other as the help provided was useless. Only last week this same assistant was sent to test 70 two-and-a-half-years-old Friesian heifers which had been gathered in a corral on the Downs. These beasts had never been handled and had never been indoors since being turned out as calves. As was expected, a mild rodeo was the result and considerable difficulty was experienced in getting through the task in a reasonable time. In these cases, only mentioned as examples, to have applied the test at the caudal fold as well as in the neck would have been extremely inconvenient. Farmers resent these jobs taking up too much time as they can interfere considerably with routine labours. I hope somebody here will have personal experience of testing big herds by the double method and will be able to tell us how the time factor is affected.

Synthetic Medium Tuberculin

About three years ago a new type of tuberculin was put on the market by the Institute of Animal Pathology, Cambridge. It is generally known as synthetic tuberculin and although now well known, it cannot yet be said to be in general use. The reason for its introduction and how it differs from old concentrated tuberculin are matters of interest. Old tuberculin appeared to give quite satisfactory results in all positive cases of tuberculosis except certain advanced ones which we encounter from time to time and which show no allergic reaction to any test. There were occurring, however, an unsatisfactory number of cases where non-specific reactions were causing trouble. Such reactions at times were decidedly large swellings and it was difficult, if not impossible, to differentiate them from genuine positive reactions. In my own experience it was particularly young heifers of about 12 to 18 months which more commonly gave such reactions. This is only an assumption based on general observations and with no controlled evidence in support. I have encountered one or more, even several, young heifers in a batch which were believed to be free from infection showing what appeared to be distinct reactions, but on being retested a few months later, not one of them reacted and subsequent tests would prove negative. Such cases were generally put down to these so-called non-specific reactions and I have no reason to suppose that such a diagnosis was erroneous. The point arises as to what causes such reactions. It appears that the action of heat on glycerine veal broth results in the formation of some product the exact nature of which is unknown but which seems to be of a protein nature which is capable of producing distinct skin lesions. It was found possible to remove most of the impurities of tuberculin by saturation with certain salts such as ammonium sulphate and almost entirely eliminate them with acetone. Such a process would appear to have overcome all the difficulties but it was also found that there possibly followed a slight reduction in the skin specific constituent. In other words, tuberculin so produced, whilst probably free from the likelihood of causing non-specific reactions, might give a less clear or obvious reaction in the positive animal. In consequence an entirely new type of tuberculin was sought which would be free from such impurities and yet retain its specific potency. It was shown that tuberculin obtained by the growing of organisms on a synthetic medium composed of a suitable combination of inorganic salts and glycerine with the nitrogen supplied by certain amino-acids was not less active than that which is obtained in glycerine veal broth. The synthetic tuberculin which we now use is prepared in such a manner and its actual method of preparation may be of interest.

The medium is sown with a strain of good tuberculinogenic activity. The cultures are incubated for about eight to twelve weeks, steamed for two hours and filtered to remove the organisms. The filtrate is then saturated with ammonium sulphate, the resulting precipitate is collected and redissolved in a

glycerolated solution in such strength that the final product is one-twentieth of the concentration of the original. After filtration and preservation with methiolate, the tuberculin is tested for potency in cattle against international standard tuberculin and also in negative animals to ensure an absence of non-specific reaction. An equally potent product could be produced by heat evaporation alone instead of precipitating the tuberculin as described. Such a product, however, has been found to give a slightly larger reaction in negative animals. The precipitated product is purer than the heat-evaporated one owing to the latter containing the residue of the salts left over from the original culture medium. It will thus be seen that every effort has been made to prepare a tuberculin which is as free as possible from any non-specific factors. At this point I wish to acknowledge my indebtedness to Mr. R. E. Glover, of the Institute of Animal Pathology, Cambridge, who has kindly given me a detailed description of the latest developments in connection with this product.

Old and Synthetic Tuberculins Compared in Practice

When synthetic tuberculin was first introduced, I, in common with most other operators, did not like it. I had got used to employing the thicker product and had become familiar with a distinct pea which so readily arises between the fingers when making a first injection. Moreover, at the second visit the pea was so much more easily found than the one which is formed by the same amount of synthetic tuberculin. I am also ashamed to admit how much of the latter product I wasted through holding the syringe with the plunger uppermost and finding the contents being distributed on the ground or the side of the cow's neck. On the other hand, synthetic tuberculin does not need warming on a cold morning and it is far less viscid and sticky to work with. After a little experience it is as easy to administer, but care must always be taken to mark the site of inoculation as in negative animals it is not always easy to find.

The results obtained by the use of synthetic tuberculin are, to my mind, far superior to those obtained with the older product. I do not think the positive reactions are any more intense; in fact in my opinion on the whole they are not so big. I find fewer of those tremendous, and to the farmer even alarming, swellings involving nearly half of one side of the neck and persisting for an unsatisfactory length of time. I do not suggest that they are not met with but I believe them to be less frequent. There is no doubt, on the other hand, that the negative results are more satisfactory. It is easier to decide what is and what is not a diffuse swelling and far fewer of those elongated and circumscribed reactions which could often be confusing are encountered. So far I have met with no definite but apparently non-specific reactions to synthetic tuberculin. Details of some field experiments to compare the two products have been reported from Cambridge. The general consensus of opinion favoured the synthetic product. It is shown that on the whole there is very little difference between the mean rise in millimetres, using the old as against the synthetic tuberculin, in the case of positive reactions. Negative reactions with old tuberculin gave a mean rise of approximately one mm. more than with synthetic. This last factor I also noted during a recent experiment using the two tuberculins at the same time. An increase of one mm. sounds almost unappreciable and yet the difference in the actual reactions was such that I could invariably tell which was the synthetic and which the old tuberculin site simply by palpation.

Frequency of Testing.—The question is often asked, how soon after testing an animal is it safe to test it again and how often can an animal be tested without it becoming sensitised and giving a non-specific reaction? A few experiments have been done on a small scale and I recently conducted one myself on a herd of tubercle-free cows which indicated that animals can be tested at recent and frequent intervals without fear of misleading results.

Avian Tuberculosis.—I mention this because veterinary surgeons doing a lot of testing, especially of tubercle-free herds, should always bear in mind the possibility of avian infection in bovines. An article in the fourth report of the Director of the Institute of Animal Pathology, Cambridge, clearly indicates that such infection is of greater importance than has been generally recognised. I have met with the condition myself, confirmed by *post-mortem* examination, and for a time it caused considerable bewilderment. As is well known, avian tuberculosis in bovines is non-progressive and is usually confined to the alimentary lymphatic glands. It is possible to experience a positive reaction in an animal infected with this organism and at subsequent tests find a negative reaction to both bovine and avian tuberculins. If avian tuberculosis is suspected, then in general it will be found that a better response is given to avian tuberculin than to bovine.

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Two other things have occurred to me since I prepared this paper. One is that we have always been taught to believe with tuberculosis that "once a reactor always a reactor" as far as infection is concerned. I wonder if that is right: personally, I do not think it is. I believe you can get an animal a positive

reactor and that at a later date the reaction may become negative. The other point is, we have constantly been given to understand that the period between an animal becoming infected and the time when it will react to the tuberculin is, at the maximum, about 56 days. My own view is that an animal can be infected and may not react for periods up to longer than twelve months and I would even venture to suggest that the time may be as long as 18 months. It does seem astounding, but you do encounter cases where such an animal is the only reactor in a herd where fresh cows, probably more susceptible, have not reacted. The only possible explanation I can offer is that animals can definitely be infected for a far longer period than one has been led to believe.

In conclusion, let me remind you that I was only asked by your Honorary Secretary to "start the ball rolling" in a general discussion on tuberculin testing and I am as anxious to learn as are any of you here present. I am sorry I have nothing original to offer you, my observations being simply the results of my own experiences gained whilst carrying out a good deal of tuberculin testing under both field and experimental conditions.

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Discussion

Opening the discussion, the PRESIDENT (Mr. J. F. D. Tutt) said that he was sure he was expressing the feelings of all of them who were there that day when he said how very pleased they were to welcome Dr. Jordan to the Southern Counties Division, and to thank him for coming there and reading them a paper on tuberculin testing; he hoped they would express some measure of their appreciation by providing a useful discussion.

"It is quite true," Mr. Tutt continued, "that the subject of bovine tuberculosis and tuberculin testing has been discussed with almost monotonous regularity at veterinary meetings all over the country, and the method of applying the intradermal test has been demonstrated so many times that I feel certain that the technique is familiar to everybody. As with other diseases and methods of detection, there is a lot to learn. The eradication of tuberculosis has for a very long time engaged the attention of our profession, and I do not consider that the work which the general practitioner has done in this direction has been recognised; with the coming year, moreover, it looks very much as if he will be deprived of having anything to do with testing or control. Unfortunately, those who should have taken adequate measures to safeguard the interests of the general practitioner appear signally to have failed, and I warn you that if he is excluded in the future in connection with this disease, this will, if the Gowland Hopkins report is carried out in full, be extended to other diseases.

"The choice of a suitable syringe and needle for carrying out the intradermal test is a personal one. There is a wide selection on the market, and they are gradually being added to. When I first started to employ this test, I used a "Record" syringe and needle, but following a meeting with Colonel Percy Simpson, F.R.C.V.S., I was impressed with the superior advantages of the dental pattern. I found that with this type of syringe I was able more accurately to judge the dose, and with the finger grips it was practically impossible for the syringe to slip out of the hand, even when dealing with the most fractious animal. For a time, I used a needle with a "Record" mount, but I found that I was liable to get some oozing of tuberculin on withdrawal, and not infrequently if the animal was restive, that I injected some of the tuberculin into one of my fingers through the needle accidentally pricking it. As I am extraordinarily sensitive to tuberculin—and I can tell you that a reaction is anything but pleasant, apart from the danger which I am told exists of inflaming an old lesion—I discarded it in favour of the Schimmel needle. With this type of needle, as those of you who know it, will, I think, agree—it is far easier to inject the tuberculin correctly, and the oozing of tuberculin is reduced to a minimum. Further, cattle do not appear in many cases, at any rate at the primary test, to be so restive, and often require no restraint other than the yoke or other tie in the byre. Dr. Jordan has alluded to the fact that flies are attracted to cattle undergoing the test in the hot weather, and oozing of tuberculin together with shaving the site of injection, is probably responsible; it is not uncommon to find, on the next visit, a swelling which is practically indistinguishable from that obtained in a positive reaction. I might add that I have noticed a swelling of a masking nature, rendering further observation at that site useless, when old tuberculin has been carelessly injected under the skin.

"I agree with Dr. Jordan that where cattle are tied up by the yoke method the best site to choose for the injection is where the neck joins the shoulder; in fact, it can in some cases be done right on the shoulder. I do not recommend any of you, if you wish to obtain a correct interpretation, to select the withers. I have seen this site chosen, with results far from flattering to the exponent when the cattle have been retested by somebody else. The greatest difficulty in applying the test is encountered when the cattle have to be done on portable dairies, and in these cases, the difficulty has been overcome by taking out a partition and leaning through and carrying out the injection. I do not advise this method, as one is liable to sustain sundry bruises to the knuckles,

besides pricking one's fingers with the needle, and in such herds, I now have the animals driven into a shed, and held by the nose. I consider that the side of the neck, or the base of the neck in cows and heifers; and in bulls owing to the normal thickness of the skin of the neck, on the body behind the shoulder blade, are the best sites to select. I make it a rule always to choose the milking side, so as to avoid any confusion at succeeding visits. In the early history of the intradermal test, I used to carry out the test in the caudal fold, but I do not recommend it, either from the standpoint of cleanliness or that of safety. Those of you who have carried out spinal anaesthesia on restive cattle will I think agree that their quickness would assure them of a place in any league football team. I have never attempted to carry out the test at the vulva, nor shall I attempt it, unless compelled to do so. I am beginning to wonder from where the next site will be chosen when all these have been exhausted, as a complete circuit has now been made of the long suffering bovine!

"Coming now to the most important matter, that of the correct interpretation of the test, I am of the opinion that its difficulty has been greatly exaggerated — from the published accounts and utterances of several veterinarians the new graduate must at times have regarded it as something out of the ordinary. Dr. Jordan has in a very few words clearly given you the correct method of interpreting results, namely, that a positive reaction must be a diffuse one and that it invariably grips the underlying tissue at the site of injection. I pay no attention to so-called pain, or tenderness, or so-called 'pipeing' of the skin fold, if the reaction is not a diffuse one. No matter how small the measurement may be, such a reaction is a positive one. On the other hand, if the reaction is of the nature of a pea- or bean-like swelling, it is to be regarded as a negative one, no matter how high the measurement may be.

"I have at various times received queries from official quarters as to why a cow with a small measurement has been rejected, whereas others with higher ones have been passed. I am certain that, although some record of a test is necessary, too close attention to measurements, and an attempt to define a reacting measurement from a non-reacting measurement, with too little attention to the nature of the reaction, has been responsible for a great deal of error. I would prefer to see the record of results confined to a description of the reaction obtained. Some few years ago I was asked to retest a Friesian herd, as at the previous test every animal which gave a reading of 15 mm. after injection, had been rejected. As a result of this, over 80 per cent. had been rejected. The retest reduced this figure to less than 40 per cent. Like Dr. Jordan, I only clip the hair off the site selected for carrying out the test, and in my view this is all that is required.

"The introduction of synthetic medium tuberculin has greatly simplified the detection of reactors, although there may be, just here and there, some peculiarities that are encountered—such as delayed reactors—but on the whole, it would appear that a great advance has been made, and the fear of that protein reaction being mistaken for a tuberculin reaction, is now passed. It has to be remembered, however, that by purifying tuberculin, the type of reaction which it elicits is slightly altered. In the negative animal, old tuberculin produces a distinct bean-like swelling which is mainly due to the glycerine broth: in the positive animal this is augmented by the specific reaction. With synthetic medium tuberculin, the non-specific response is, in most cases, practically eliminated, so that the reaction in positive animals is often of the flat diffuse type. As a result, the final measurement may be somewhat greater with old tuberculin than with synthetic medium tuberculin. If, however, these differences in the behaviour of the two products are recognised, more clear-cut results are obtainable with synthetic medium tuberculin.

"Can Dr. Jordan give us any figures regarding the accuracy of tests with both these brands of tuberculin, as deduced by *post-mortem* findings? In the *Veterinary Bulletin* for January, 1936, Lourens has quoted a series of comparative tests in cattle (subcaudal fold) which has convinced him that a synthetic medium tuberculin whilst inducing a much smaller reaction in negative cattle than with old tuberculin, at the 24th hour, was equal to it at the 48th hour. He stresses the importance of filtering tuberculin since unfiltered tuberculin might contain a few dead tubercle bacilli capable of sensitising animals to subsequent tests.

"I think that you will agree with me when I say that the degree of reaction is in no way indicative of the degree of infection, and that it is very common to find, on *post-mortem* on animals which showed only a slight reaction, that they are in an advanced stage of generalised tuberculosis. On the other hand, many which have given a pronounced reaction have shown but scanty lesions of tuberculosis. It is important to bear in mind that an animal, although infected with tuberculosis, cannot react to tuberculin until it has reached the allergic stage of the disease. In many cases the period elapsing between the time of infection and the time when the animal is in such a state that it will react to tuberculin may be from four to eight weeks, or longer, according firstly to the virulence and type of the infection, and secondly to the susceptibility of the animal.

"For this reason, I regard the recent

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provision requiring the retest of fresh arrivals from a non-tested herd, into a tested herd, two months after their date of admission, as a very wise one, and I hope that it is rigorously enforced. I would go further and insist that until a herd is found to be free of reactors, it must be retested every three months, and that a period of six months between tests should not be allowed until this has been attained. I am convinced that this is the quickest way to establish tubercle-free herds. Present legislation insists that any reactors found in a tuberculin-tested herd for which a licence has been granted must be at once removed from the herd, but it allows the owner to keep them at another farm. I should like to see this prohibited, as it does not require much stretch of the imagination to guess where any shortage of milk in the tested herd is made up from when occasions arise, and it explains why tubercle bacilli are at times found in milk reputed to come from tested cattle.

"I am very interested to read Dr. Jordan's reference to the possibility of avian infection in bovines, and should have liked more information about it. I am convinced that this factor is apt to be overlooked not only in the case of cattle but in those cases where pigs are found to be infected. I think that it will be found that a good many cases of tuberculosis in swine owe their origin to this source, and in this connection, I have from time to time found, when visiting premises from which tubercle-infected pigs have come, that losses have been experienced in the poultry, and when the owner has granted the facility to carry out a *post-mortem* on them, tuberculosis lesions have invariably been found. Unfortunately, unless the owner is agreeable, the veterinary inspector has no authority to carry his investigation beyond that of inspecting the milk cattle and taking samples. Small wonder, therefore, that more often than not all such samples are found to be negative, and the source of infection never discovered, although strongly suspected.

"Very shortly the granting of licences for tuberculin-tested milk will be transferred to the various local authorities, and I express the hope that the points that I have raised will be impressed upon them by their veterinary officers, and if possible rectified. It is indeed probable that in the course of time the attested scheme will be similarly transferred.

"In conclusion, I express the hope that the general practitioner will not be left out in the cold, that each and all will have the fullest possible use made of his services, and that it will not be a case, as I am afraid it often is, of being 'selected and not chosen.' As you are aware, Dr. Jordan has in his district brought out a scheme of tuberculosis eradication which, if adopted, will ensure the former, and this has been accepted by the general practitioners there. There will be no enmity between our various branches if the control of animal diseases is left to the profession."

The discussion was continued by Mr. J. B. White, who said he first wished to thank Dr. Jordan for such a practical paper.

In his experience, the skin at the base of the neck was rather thicker than further forward and not quite so supple. He asked if Dr. Jordan had any reliable method of temporary marking for heifers that would cover the period of the test; he himself used auctioneer's tickets.

Although synthetic tuberculin was much more fluid than old tuberculin, he thought one could still feel it enter the skin, and that, provided one did feel the tuberculin go into the skin, that denoted it was injected correctly. What type of reaction to bovine tuberculin did one get in an animal infected with avian tuberculosis?

He agreed with Dr. Jordan that some cows seemed to take a long time following infection before they developed the power to react, and for that reason he felt it would have been almost better if instead of two months' isolation it had been three months for newly-introduced animals.

Mr. Tutt had mentioned that the size of the reaction was no guide to the extent of infection; he personally thought the reaction was governed by the condition of the animal's defensive mechanism to the tubercle baciflus at that particular time. That was why recent infections usually gave a fairly large reaction.

Did Dr. Jordan consider that repeated testing on the same site was detrimental?

Mr. J. D. McLaughlan observed that Dr. Jordan did not seem to like the caudal fold, but in testing in the open bails it was very difficult to get to the neck to inject the animals with the tuberculin and he should think the caudal fold would be an excellent site. He also thought, in the case of the initial testing of a herd, that the caudal fold was very useful along with the intradermal test in the neck because of the doubtful reactors they occasionally met with. It must be of some use because it had been employed extensively in America where they had done a great deal towards eradicating tuberculosis in cattle. What had been Dr. Jordan's experience as to the dosage of tuberculin, and could he say from his experience whether the amount of the dosage had any bearing or significance on the reaction? He also desired to know what the essayist considered the best site for inoculating in the case of cattle in bails. In the prescribed form they had to fill in the Ministry had a foot-note that the caudal fold should not be used: perhaps Dr. Jordan knew of some reason why that had been added as an instruction.

Mr. W. F. Maynard said there were one or two things upon which he certainly agreed with Dr. Jordan. He always used a 0·133 syringe himself but he found the finger bars were a great help even on the small ones. He would also like to know the exact meaning of the word "diffuse."

Mr. K. G. Morgan remarked that whether the reaction was diffuse or not would always be a matter of opinion. They were bound to get some that were very near the dividing line between reactors and non-reactors and there the human element stepped in.

Mr. Maynard: "But what is a 'diffuse' swelling?"

Mr. B. Gorton: "It is one of those words used in science to hide ignorance." (Laughter.)

Mr. Morgan also asked if there was any objection to re-testing immediately in the case of

doubtful reactions. Why not start again on the other side of the neck right away?

Mr. J. H. Ripley asked if the application of the subcutaneous test was not a good way of settling any question of doubtful reaction. With regard to the actual dosage, he did not think that mattered much.

Mr. E. C. Morris asked what would happen if, after testing a herd, a cow died a few hours later from anthrax. Would the insertion of the needle tend to spread that along the herd? With regard to the length of time which elapsed between infection and reaction, Dr. Jordan had told them he had had numbers which had reacted up to 18 months. Would ordinary reinfection from premises account for this?

Major E. S. Martin said that he had found that the small "Record" syringe controlled in the palm of the hand was very useful for quick work—such as testing a large number of horses intradermally with mallein in a limited time—but it was not sufficiently exact for the modern requirements of the tuberculin test.

The results of a tuberculin test appeared to depend largely upon how the individual making the test interpreted the result. One person might try to pass as many as possible, while another would reject all doubtful reactions. In an instance in which there had been a wide difference in results, the explanation was found in the fact that there had been a recent avian infection.

Mr. J. Facer asked if Dr. Jordan could tell them definitely the time from infection to reaction: how long did it take, as nothing had apparently been worked out on that point? The caudal fold was most useful, in his view, if only to get a second opinion.

Mr. H. S. Caldwell remarked that he wished to thank Dr. Jordan very much for coming there that afternoon and giving them the paper. It was always interesting, he said, to hear the opinion of anyone who had done a very large number of tests and who had charge of the ridding of an area from tuberculosis. Personally, he had not met with the difficulty of flies worrying the site of the inoculation, but it seemed to him that the use of a fairly thick needle might very well cause more trouble in that respect than that of a very fine one. With regard to reactors not being always reactors, he believed that in the case of human beings the subject might react at one time and, on becoming completely healed, would no longer react.

Mr. Maynard asked Dr. Jordan if he thought that avian tuberculosis was really very prevalent.

The Reply

Invited to reply, Dr. Jordan remarked that he felt flattered at the amount of discussion his paper had aroused. Mr. Tutt had spoken about the needle, and he agreed that the needle could definitely be too short: they must apply the tuberculin into the depth of the skin, and not merely into the surface—it was just as bad to have it inserted too superficially as too deeply. He was very glad Mr. Tutt had also mentioned about flies worrying the cows because he had been rather alarmed at this at first, since it was a new experience to him; actually, the majority of their tests in Scotland were done in November and May, and they were not particularly worried with flies during those months. The site on the shoulder was all right but he did not like the withers and neither did he like the caudal fold. As far as synthetic tuberculin was concerned he had no authentic figures to show that it had been more accurate than the old tuberculin. As regarded avian infection in pigs, it was estimated that 34 per cent. of tuberculous infection in pigs was of avian origin and he agreed that pigs could definitely infect premises. Reference had been made by their President to the schemes for the eradication of tuberculosis. In West Sussex they did the work themselves, and once a herd had become free they were passing it over to the practitioner to do the work required in connection with the Milk (Special Designations) Order. Mr. White apparently also liked his syringe, but he did not like the base of the neck as the injection site. He also found the skin there was very thick. How to mark heifers was another question raised. He confessed he did not know of any way of marking them, but he agreed if they could find one it would be a great help to them. With regard to another enquiry put to him by Mr. White, they could certainly feel the synthetic tuberculin go in and as a matter of fact that was how he controlled his dosage. The avian type of reaction was definitely good.

As to whether two months was long enough as an isolation period he must answer "No," but the question was whether it was practicable to ask people to isolate their cattle for an indefinite period. They could get them to do it for a comparatively short period, whereas if they tried to prolong the time they might get nothing done at all. He did not know why the reactions to further tests should be so large: as a fact, he had not thought about it, but he had found that in a free herd, especially in a herd that had been free for some years, the negative reactions were much smaller and cleaner than the negative reactions in untested herds. They could retest an animal on the same site; he had done it several times himself. With regard to the dosage, he did not think it mattered a great deal—within reason, of course. To be candid, he guessed his doses. Possibly this was because of the experience he had had, but he seemed to know how much to squeeze although he could not tell them why he did it. Mr. Gorton wanted a definition of the word "diffuse." Evidently he had not altered a bit since 1922—(laughter)—and he could only suggest to him whether it would not be easier if one said "fluffy." With regard to Mr. Maynard's question as to whether avian tuberculosis was prevalent, they were beginning to think it was.

Mr. Maynard: "Would you put a cow that had it out of the herd?"

Dr. Jordan: "It would certainly be to the advantage of the herd, because you cannot be sure until it is killed."

Continuing, Dr. Jordan said that with regard to the retesting of animals on the same day they did do it at frequent intervals and it would not make any difference. Concerning the use of the subcutaneous test as a re-trial, he had practised this but it had not helped him much. However, he had a big regard for this test and he still liked it; he thought it had done a tremendous amount of good and he had no patience with those people who said it was of no value, but under present conditions it was not a practical proposition. With regard to Mr. Morris's question concerning the possibility of spreading anthrax infection, he really did not know. They were not going to draw any blood by inserting the needle, but he would not like to give any opinion as to whether anthrax could be carried to other cattle in the herd. His reply to Mr. Facer's question was "only a few days": it really depended upon the potency of the dose.

The Control of East Coast Fever in Africa, with some remarks on Colonial Office Policy

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As East Coast fever is one of my chief interests I wish to take under review the literature since my thesis was published in 1926[9, 10] and offer some remarks on Colonial Office policy as to the control of animal disease in native reserves.

There now appear to be four or five different types or species of bovine Theileria. These are dealt with in summary in the *Veterinary Record* (Vol. xi, No. 10), on page 260 by du Toit and on page 262 by Yakimoff.

It is noteworthy that du Toit in his paper, read at the Eleventh International Veterinary Conference, in London, in 1930, states that immunity in East Coast fever is "solid and sterile." All the evidence indeed indicates that the recovered animal is sterile, but one attack, followed by an interval of protection and re-exposure to infection, may be followed by another attack. In 1931 du Toit[20] admits this as "well-known" but again I do not like his reasoning for he speaks of immunity being "broken down."

Solid immunity surely can only mean that by no known means can an animal be re-infected (or caused to relapse)? du Toit's experiments[20] were designed to break down immunity by the infliction of hardship and cause relapse but in the Kenya experiments no hardships were inflicted on the experimental animals and the method of infection was the natural one. "Break-down" definitely suggests an active process involving force or hardship but loss of immunity is a passive process, it merely lapses. One cannot break what has ceased to be present.

Richardson[13] puts forward again the interesting speculation that East Coast fever is due to *T. mutans* plus a virus. His most important premise on which he bases his argument, however, is the erroneous one that immunity conferred by one attack is absolute. He supposes, too, that the virus is the immunising factor and *T. mutans* the lethal one, in which case all that would be necessary would be to immunise cattle against *T. mutans*, which is a well-known and simple procedure.

It has been supposed that there is only one species of Theileria in bovines plus some other factor controlling symptomatology and mortality but I see nothing in favour of this view.

Taking into consideration an East Coast fever immunity-testing area, here too, we will find every clinical variation from benign without blue bodies to hyper-acute with abundant blue bodies; but all are immunologically the one disease, East Coast fever, and the clinical variations and differences in mortality correlated therewith can only be put down to differences in natural resistance of the cattle, in the present state of our knowledge.

There seem to be fairly distinct and fairly constant differences between the various species of Theileria and the diseases they cause but the only satisfactory proof of their distinct nature must be immunological. In the case of *T. parva* and *T. dispar* this proof has been furnished by Sergent, Donatien, Parrot, Lestoquard and Plantureux.[14]

A former distinction between *T. parva* and the other species has disappeared as *T. parva* has been found inoculable with blood[14, 17] containing blue bodies, as I suggested in 1926.[9] Another distinction between *T. mutans* and the other species to disappear has been the supposed absence of blue bodies. These are now believed to occur rarely.[16]

Turnbull's cases in North-East Rhodesia[21] are considered by Theiler and Graf[16] to have been due to *T. mutans*. If recovered animals were carriers, as Turnbull states, the parasite could not have been *T. parva*.

In the 1932 Annual Veterinary Report of Tanganyika Territory, speaking of East Coast fever at the Njombe stock farm which was situated in an enzootic area, Hornby says: "Now it may be observed that if the calves contract the disease while they are so young that they are feeding on milk alone and if they can get all they need of this food, then mortality may be only 5 to 10 per cent.; if, however, the calves are not in this optimum state of nourishment but are already eating grass or their mothers being milked heavily, then mortality may soar up to 100 per cent."

The total calf loss in Eastern Africa in enzootic areas has been estimated at anything up to 70 per cent., or possibly even more, and because these are East Coast fever areas most of this loss seems to have been debited against East Coast fever, but, at last, we have been given definite figures. It is true that Walker in the 1927 Kenya Annual Report records a 60 per cent. loss of unweaned calves from East Coast fever, but his calves were up to seven months old and were, I believe, unprotected from cold, rain and sun while in the testing area where five of the total nine deaths occurred. In 1926[9] I pointed out how vital I considered adequate shelter and food and said that I considered the younger the calf got the disease the less likely it was to die under infection. Hornby has now proved my theories correct.

Referring next to correspondence between Mr. Cowin of the Tanganyika Veterinary Service and myself,[11, 3, 12] as far as this related to percentage loss of calves in enzootic areas this loss, where excessive, can now better be seen to be due to bad management and/or the area being insufficiently infected to maintain immunity after recovery from the original attack.

Some native tribes think of their calves first and others of their own stomachs, to such an extent sometimes that crossing a tribal boundary is at once apparent from the condition of the young cattle. This will obviously be reflected in the total loss of the calves and in an enzootic area in the loss from East Coast fever as well.

An interesting theory is put forward by Tanganyika workers in the 1932 Annual Report where it is suggested that a light infestation of infected ticks may cause a lighter mortality than a heavy infestation.

This is worth investigation, bearing in mind, however, the fact that infestation by a few infected ticks may not convey the disease at all—*vide* Kenya Annual Reports for 1930 and 1931.

I suggest that another method worth trial is infection *via* the tail alone. Dangerously active pleuro-pneumonia vaccine was once given in the tail in Kenya when it could not be inoculated elsewhere and it is just possible that East Coast fever might be similarly less virulent by that route.

Reading in this connection§20 of the Tanganyika Annual Report for 1930 we find that in an enzootic area, where dipping was practised but not universal, Hornby was relieved to find enough ticks still present in the tails and ears to maintain immunity, so one may well wonder whether in such circumstances the "success" of dipping is due merely to the fact that it is not over successful, enough ticks surviving to maintain immunity, whether it is because infective tick infestation is light or because the main avenue of infection is *via* the tail?

I next quote from the Kenya Annual Report for 1929 where Doherty, speaking on the passage of the Cattle Cleansing and Fencing of Holdings Bills, says "The problem of eradication of tick-borne diseases in this Colony is a difficult one because public opinion is divided on the question. It is stated by one school that ticks should not be eradicated"—as the young stock is immunised. "In other words, all the Colony should be allowed to become infected for the sake of producing immune herds."

This is stretching it a bit too far! There are large areas in Kenya where East Coast fever is epizootic and consequently eradication is the only practicable policy, for in non-immune cattle the loss may be 95 per cent. or more. In enzootic areas, however, the position is completely different. These areas are well-suited to the ticks and the disease and after all the necessary mortality is only 5 to 10 per cent. The one area cannot be treated the same as the other.

Reading the remarks of many of the field veterinary officers in Eastern African Annual Reports one would imagine that all that was necessary to clean up an enzootic area was to build and use enough dipping tanks and everything would go well, automatically. This is entirely neglecting the facts that, firstly, immunity in young animals is probably only a matter of a few weeks in absence of re-infection and, secondly, that dipping is not a satisfactory method of eradicating East Coast fever in the presence of susceptible animals.[19] The only danger in a dipping campaign in an enzootic area is when the stage of eradication of Rhipicephalus ticks is approached. In many areas a vast reduction is possible before that and can only be beneficial. In over-grazed areas this stage will be reached soon and in well-grazed areas very considerably later, other things being equal. At this stage, when ticks are just sufficiently numerous to maintain immunity, any further reduction will the more certainly, the further it progresses, lengthen the intervals between infections of East Coast fever, and in the young lightly-immunised stock there will come a time when the intervals exceed the duration of immunity. As far as this class of stock goes the effect will be to convert an enzootic artificially into an epizootic and a 5 to 10 per cent. mortality into one far greater. The more animals that lose their immunity and become re-infected the greater also the proportion of infective ticks will become.

If dragged out sufficiently long for the adult well-immunised stock to disappear, the final stage could theoretically be reached when every animal would be susceptible and every remaining nymphal or adult Rhipicephalus tick infective.

This is approximately the stage actually existing on farms where dipping is practised in enzootic areas, so it is not so theoretical! It must be determined soon how long immunity lasts in cattle of various ages removed from enzootic areas. Daubney in the 1932 Kenya Annual Report mentions eight head of adult stock removed from an enzootic area for some years and tested for their immunity, with three reactions, no blue bodies, and no deaths.

In my opinion there is only one sound way of achieving the final eradication of East Coast fever from an enzootic area. It is by removing all except well-immunised cattle from the area, farm by farm, until the ticks are further reduced by dipping and then such ticks as remain have been cleansed of their East Coast fever infection by feeding on immune stock.

One can foresee no great scientific or practical difficulty if one proceeds in this way, but merely to begin a compulsory dipping campaign without consideration of points such as I wish to bring forward will lead to severe losses in the enzootic area.

Referring to correspondence between Mr. Hornby, Chief of the Tanganyika Veterinary Service, and myself[11, 4] my letter was based on a misconception and I tender my thanks to Mr. Hornby for the kind way in which he pointed this out and stated the real policy of his Department.

I am glad to see that I was wrong on one point in my thesis[9] when I stated that it seemed impossible to get rid of the cattle of the native labourers resident on farms. With marriage dowries being paid in cattle the presence of these cattle on farms means constant illegal movement of stock to and from native reserves and the scattering of East Coast fever, rinderpest, pleuro-pneumonia, etc., all over the settled areas. From recent Kenya Annual Reports it appears that it has been found possible to move a fair proportion of these cattle back to the native reserves. This is certainly progress.

In the Tanganyika Annual Report for 1934 Hornby has some interesting observations on the bionomics of *Rhipicephalus appendiculatus* and correlates the state of the grazing with the numbers of this tick and the amount of East Coast fever present. It may be summarised thus: (*a*) This tick prefers cool, moist areas and, generally speaking, good grass cover is necessary; (*b*) over-stocking with the resultant over-grazing causes reduction in the numbers of this tick due to lack of grass cover; (*c*) epidemics of disease reduce the stock, allowing of recovery of the grass and the increase in the numbers of this tick and so increase the amount of East Coast fever.

A good paper on artificial immunisation and immunity is that of Walker and Whitworth 1929.[22]

In attempting artificial immunisation Walker (Kenya Annual Report for 1927) found the best method to be inoculation of spleen pulp intravenously and simultaneous subcutaneous and intradermal inoculation of spleen pulp and blood, but Richardson[13] records that his best results were obtained by inoculation of lymphatic gland juice into the prescapular lymph gland.

Dipping perhaps deserves more mention than I have yet given it. While of truly great value in the absence of East Coast fever, it cannot be looked upon as being as near to perfection as can be attained, for it comes far short of that high mark where East Coast fever is present, where the area is well-suited to ticks and they are abundant, where wet weather is frequent and in the case of deep-feeding ticks such as Amblyomma. No real progress has been made since Watkins-Pitchford's work was published in 1911 and I cannot be persuaded that no progress in any line of research is possible in a quarter of a century!

Success in the United States tick-eradication campaign is due to the fact that it has been directed against Boophilus ticks which are easily killed.*

A substance that has come into prominence for killing warbles of late years is derris, which will also kill ticks. In experiments Dr. Bridges and myself, in Kedah, found that there seemed to be a deterrent effect as well as a lethal one. This substance might be experimented with alone or added to arsenical dips. If found to be of value I may mention that it can be grown in Malaya on a plantation scale with relatively cheap labour and I believe it is so produced now.

In the past it was the custom in Kenya if a farmer who dipped his cattle had trouble with East Coast fever at once to blame the dipping and it would frequently be found that the dip was under strength and so on. I was not satisfied that this accounted for all the trouble and various authors have now recorded losses from East Coast fever despite proper dipping [*vide* Walker, page 230 of the Kenya 1929 Report, Hornby, § 144-146 of the 1928 Tanganyika Report, and du Toit and Viljoen, 1929,[19] who, experimenting on an infected (East Coast fever) farm in South Africa, found proper dipping, hand-dressing, etc., be ineffective in preventing East Coast fever.] Their work indicates that there can be no great accumulation of arsenic in the skins of dipped cattle which Watkins-Pitchford considered to be of such great value in preventing attachment of ticks between dippings.

As I have already said, dipping is very far from perfection. Further work which appears to me to be necessary is the determination how great the loss from East Coast fever is in:—

(1) Calves of native cattle immune to East Coast fever.
(2) Calves of native cattle not immune to East Coast fever.
(3) Calves of grade cattle not immune to East Coast fever.
(4) Calves of grade cattle immune to East Coast fever (if obtainable).
(5) Calves of pure-bred cattle not immune to East Coast fever,

when exposed to infection from birth under optimum conditions in every case:—

(A) When fed on milk from immune cows.
(B) When fed on milk from non-immune cows.

It appears unlikely that groups under (A) would show less mortality than groups under (B) but one never can tell. If under proper management pure-bred bull calves can be immunised against East Coast fever with only a small loss, it becomes at once a practicable proposition to re-introduce pure-bred bulls on to farms in an enzootic area or into native reserves if that be desired.

I must call attention to the work of Lewis on ticks in Kenya[5, 6, 7] and of Cowdry and Ham, 1932,[1] and Cowdry and Danks, 1933,[2] on the life cycle of the parasite. Steck, 1928,[15] writes on the histology of the disease. Another interesting development has been the finding by Mettam[8] of blue bodies, apparently of *T. parva*, in the brains of cattle suffering from "Turning Sickness" in Uganda. The great majority of cases were obtained in adult animals which were definitely known to have recovered from East Coast Fever. A similar condition exists in Kenya.

Policy

Finally, although I have written about a method of clearing enzootic areas of the disease I am not an advocate of cleaning the native reserves which are within the enzootic area. Perusal of the Annual Reports of the Veterinary Departments of Kenya and Tanganyika, shows that over-stocking is a huge problem in most native reserves. In Tanganyika it is true that their problem is more restriction of pastures by tsetse fly and trypanosomiasis, but this restriction has caused over-stocking just the same. The same condition exists in the South African native areas but there it is partly due to restriction of trade, so I understand.

Before the Governments interfered with the processes of nature in East Africa every year or every few years, rinderpest particularly, and other epidemics to a much lesser extent, swept in huge epizootics over the whole of this area and kept the cattle population within bounds. The thicker the cattle population the more certain involvement in the epizootics.

The estimate is sometimes made that the stock population at so much a head constitutes an asset of so many million pounds to Kenya Colony, but the actual trade done is trivial in proportion and the asset exists only on paper. Another estimate that may be made is that the Veterinary Department having saved so many tens of thousands of cattle from death from rinderpest, etc., have saved the Colony so many thousands to hundreds of thousands of pounds loss of assets. At first sight it appears that that is so, but let us look further into the matter.

What becomes of this saved stock and these millions of pounds of assets? There is only one answer to that, unfortunately, and that is that the stock live, reproduce and die in their time—only a tiniest fraction coming into trade. Payment for wives in cattle cannot be said to improve the position for it only means a few head travelling a few miles and resembles a man transferring small change from one pocket to the other instead of spending any. It is a most deplorable thing to see these vast assets being uselessly hoarded and causing by their existence and numbers serious damage to large areas of good land. Over-stocking must mean over-grazing, over-grazing means erosion and loss of soil, so that it is certain that efforts to maintain native-owned stock in life, however well and charitably intended, have been of no real value to the country but are instead leading to the ultimate conversion of large areas into deserts. To the best of my knowledge this conservation of native-owned cattle was dictated from the Colonial Office as it was represented, with some truth, by missionary societies, etc., that the natives were getting precious little return for the taxes they paid. I believe that the Veterinary Department is quite free of fault in this matter. Now that the problem of over-stocking has been created—and surely East Africa held enough problems without creating new ones—Government are attacking it by endeavours to secure slaughter, sale and improvement of cattle, but their puny efforts are practically futile in the face of the native mentality so constituted as to imagine that a man with 20 head of any kind

*It is generally taught that success was achieved relatively easily in the United States of America because the vector is a "one-host" tick, whereas the vectors of East Coast fever are "three-host" ticks, therefore necessitating much shorter dipping intervals for their eradication. We know of no evidence suggesting that the ticks are more easily killed in the sense that they are more sensitive to the lethal action of the agents used in dipping.—*Editor.*

of cattle is a much bigger and more important fellow than another individual possessing five head—or even twelve—of good quality.

At first sight it seems very hard on any individual native to lose half his cattle every year or so from rinderpest, constituting as these do almost his only real individual property, but if he makes no use of his cattle beyond paying dowry for a wife or two and consuming the milk, it then becomes quite obvious that there is no real point in preserving alive as many of his cattle as possible, merely so that the owner may derive pleasure from seeing them eat up the land like locusts. Compulsory sale is impossible of consideration and indeed no sufficient outlet at present exists. A large proportion of these cattle is affected with the measles of the beef tapeworm too. Another aspect of this question of keeping useless stock alive is the effect of doing work they know to be useless, or worse than useless, upon the staff. How can any man be enthusiastic and hard working over a useless job? If men lose interest in their work and are reduced to time-serving, a general deterioration of the whole Veterinary Service is unavoidable.

Members of the profession who have not served abroad can have little idea of the large range of extra subjects that must be mastered by the Colonial veterinary surgeon after graduation. Even though the training of the ordinary graduate has been improved since my time (1920) it can never be sufficient for such specialised employment. Take a few of the ordinary East African items to be thoroughly absorbed: new poisonous plants, ticks, anaplasmosis, piroplasmoses, theileriases, rinderpest, bovine pleuropneumonia, trypanosomiasis, and other diseases, and most important of all, the ability to use a microscope. This should be within the range of every qualified man soon after arrival, for Government pays him for this and not for his past knowledge of surgery and colic. The string of calving and cleansing cases is replaced by the string of outbreaks of rinderpest, and cutting of colts by having to sort out the trypanosome affected animals in a herd of 200 wild cattle. Upon ability to use a microscope depends the major part of this new work and blood parasitic work means about six solid months work before a man knows what he is doing. The East African veterinary surgeon has at least the huge professional advantage of having plenty of material to hand. Should it be necessary for the veterinary officer to send his smears to the laboratory for diagnosis to be made there, as used very largely to be the custom in Kenya, he hinders the work of the laboratory while the men there do his work for him and he is reduced to a value very nearly approaching that of the unqualified stock inspector. As in some places ordinary African natives have been trained to diagnose the chief parasitic diseases microscopically the position of the qualified man who cannot do so is a most invidious one. Instruction of newly-arrived officers at the laboratories is usual before they go to work, but practically all this post-graduate work depends upon the enthusiasm and interest of the individual officer and anything that causes that to be lost is almost criminal. Of all the ways to cause a man to lose interest and enthusiasm commend me to dumping him down on a job he knows to be, at best, completely useless—and such is the nature of this native reserve work. Then again, I can personally vouch for the huge enzootic areas of the Nyanza Province native reserves; an enzootic East Coast fever area is usually an enzootic malaria, blackwater, dysentery, typhoid, etc., etc., area as well, and, at best, an officer must live close against a primitive people with primeval ideas as to sanitation. For one example, I found it quite difficult in some areas to procure milk to which cow urine had not been added as a preservative. Then while they drag through their years of service in native reserves what is to be done about marriage or with wives if already present? My wife, it is true, trailed round with me for quite a time but how many would or could? We had no family, for one thing. There is extremely little point in the Report of a Royal Commission urging the necessity of better trained men being employed in the Colonial Veterinary Service if this is the best use that can be found for them in East Africa. If this exposure of "well-trained" young graduates to all the ills flesh is heir to served any useful purpose it would be another matter, but what purpose does it serve, or is it likely to serve, in Kenya?

I am not well enough acquainted with the other Colonies, Territories, etc., to write much about them in regard to this matter.

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For failing to give proper attention to a suffering horse, a Warwickshire farmer has been fined £20, with four guineas costs. The horse was found in a dying condition, and a veterinary surgeon estimated that it had been lying in the same spot for about 36 hours.

ABSTRACTS

[**Avian Tuberculosis in Cattle.** Glover, R. E., and Griffith, A. Stanley. (1934-35.) Rept. Inst. Anim. Path., Camb. **4.** 94-102.]

In this paper the authors give the histories, *post-mortem* findings and bacteriological results in four cases of limited, retrogressive tuberculosis which occurred in two tuberculin tested herds. From three of the cases avian tubercle bacilli were cultivated, and in the fourth case the acid-fast bacilli which were seen microscopically were apparently dead. The first case occurred in a Jersey bull bought by the owner of a tested herd with a certificate that the animal had passed the intradermal tuberculin test, but when re-tested after arrival at the farm gave a good reaction to mammalian tuberculin. *Post-mortem* examination revealed the presence of small tuberculous foci in the pharyngeal and mesenteric glands which showed acid-fast rods microscopically and yielded colonies of typical avian appearance when cultured on egg and glycerin egg. These results were confirmed by inoculating guinea-pigs and fowls. The second case was a reacting Jersey cow from the same herd. She was tested a month later by the double intradermal method with " old " tuberculin, synthetic medium tuberculin, avian tuberculin and johnin. Very good reactions were obtained with avian tuberculin and johnin and only moderate reactions with the mammalian tuberculins. When slaughtered soon after this, nothing of a tuberculous nature was found with the exception of an irregular, completely calcified nodule about the size of a barley grain in a terminal mesenteric gland. On microscopic examination, short, slender acid-fast bacilli could be seen, but cultural and biological tests failed to show that they were viable. In Case 1 and Case 2 no history of contact with tuberculous fowls was obtained.

The next two cases, however, occurred in calves which had been in contact with infected fowls and had been reared on the farm under conditions which were believed to exclude the possibility of contact with tuberculous bovine animals. The calves failed to react to bovine tuberculin when tested one month and four months later, but gave definite reactions to both bovine and avian tuberculins five months after the time of the first reaction. As with Case 2, better reactions were obtained with avian tuberculin and johnin than with mammalian tuberculins. At the *post-mortem* examination of these two calves the lesions consisted of tuberculous foci confined to the mesenteric glands and subsequent verification of the acid-fast bacilli recovered showed that they belonged to the avian type.

The authors discuss the literature published on the subject of avian tuberculosis in bovines and state that accurate information regarding its prevalence now and in the future could be gathered by a systematic search for, and bacteriological investigation of, discrete localised lesions which, it would seem, are usually associated with infection with the avian type of tubercle bacillus. S. J. E.

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[**Intestinal Tuberculosis in Bovines.** Kiedrowski, L. (1936.) *Zschr. Infektkr. Haust.* **50.** 1. 41-64.]

In the pathogenesis of tuberculosis in man and animals, it is found that the generalisation made by Cornet always holds good—that the tubercle bacillus, at its site of entry into the tissues, produces a primary lesion both in the organ and in its associated lymph gland. The observations of the author on intestinal tuberculosis in calves give further support to this view. In eleven animals, of ages varying from four to twelve weeks, primary tuberculous lesions were found in the intestine and in the mesenteric glands. The extent of the changes was always much greater in the lymph gland than in the intestine, and in the latter site it was usually represented by a minute caseated or calcified focus, often no larger than a pin's head, and always situated in a Peyer's patch or solitary lymph follicle. In older calves and in young cattle the intestinal lesions are often very difficult or impossible to find: it is considered that they have undergone healing and they are in many cases only demonstrable on histological examination.

In chronic pulmonary tuberculosis of cattle, intestinal lesions are common, and are the result of the swallowing of bronchial secretion containing tubercle bacilli. It was found that this type of intestinal lesion—reinfection secondary to chronic pulmonary tuberculosis—can exist without the presence of tuberculous foci in the mesenteric glands. The same is true for chronic udder tuberculosis—the commonest form, also termed lobular infiltrating tuberculosis—in which the supramammary lymph glands may show no obvious lesions of tuberculosis.

The importance of these findings in meat inspection is clear. In the case of primary tuberculosis of the intestine, the intestinal lesions, especially in older calves and adult cattle, are often not recognisable macroscopically although the mesenteric glands show evidence of tuberculosis. On the other hand, in adult animals there may exist chronic intestinal tuberculosis without macroscopic involvement of the mesenteric glands. It is thus important that, if every case of chronic intestinal tuberculosis is to be detected, the lymphatic glands and the whole of the intestine should be thoroughly examined by inspection and palpation. E. G. W.

[**Udder Tuberculosis and Cell Picture of Milk.** (Trans. title.) Ehrlich, C. (1936.) *Zschr. Infektkr. Haust.* **49.** 2. 97-104.]

A number of workers have suggested that tuberculosis of the udder can be satisfactorily diagnosed by the character of the cells found in the milk, *e.g.*, large numbers of epithelioid cells (especially when in groups), or giant cells (either of the Langhans type with peripherally arranged nuclei, or with nuclei scattered throughout their cytoplasm). The author considers that the differences between the cell pictures in udder tuberculosis and chronic streptococcal mastitis are insufficient for accurate differential diagnosis. Smears obtained from milk deposits contain many broken-down cells, granular débris, etc., and it is often difficult to distinguish between epithelioid and epithelial cells. Giant cells and epithelioid cell groups are diagnostic of udder tuberculosis but are present in only about 50 per cent. of cases. It is suggested that the most rapid and satisfactory method is examination for tubercle bacilli in smears of the deposit, confirmatory evidence being sought, in cases where the bacilli are very scanty, by the detection of giant cells or epithelioid cell groups.

E. G. W.

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[**The Influence of Intra-uterine Factors on the Foetal Weight of Rabbits.** Rosahn, P. D., and Greene, H. S. N. (1936.) *J. Exp. Med.* **63.** 6.]

During the investigations described in this paper 471 foetuses carried by 71 pregnant rabbits were examined.

The average gestation period was found to be 31 and a small fraction days.

It was found that as the gestation period draws to a close the relative increase in foetal weight is progressively retarded.

Near the full term the foetal weight was found to be influenced by the position of the foetus in the horn, the foetuses nearest the ovary being the larger and those nearest the cervix the smaller. Out of these 71 pregnant does, 63 were killed and examined, and it was noted that there was no significant difference between the numbers carried in each horn of the uterus, and that head presentation was commoner than breech presentation.

B. B.-J.

Experiments in the "rugging" of sheep have proved highly successful in Australia. There was a difference in one experiment of four pounds in weight and 2d. per pound in price in favour of the fleece from sheep that had been fitted with a rug. The rugging is said to bring out the best features in the wool besides keeping it free of dust; moreover, it enables the lambs to fatten more quickly and reduces the risk of blow-fly infestation. About three adjustments to the rug are necessary to allow for growth.

REPORTS

Kenya Colony and Protectorate

REPORT OF THE DEPARTMENT OF AGRICULTURE, 1935 (Volume II)

Volume I of this report was reviewed in our issue of December 12th, 1936. The present volume deals with the report of the Chief Veterinary Research Officer, together with those of the various specialists in the Plant Industry Division.

During the year the old Government Stock Farm at Naivasha was converted into a research station under the control of the Chief Veterinary Research Officer with the purpose of taking up the study of animal genetics and nutrition and to observe the influence of these factors on fertility (the fertility rate in the native cattle is low). This innovation should prove a very helpful adjunct to veterinary research in Kenya and its repercussions may well be of benefit to other tropical countries.

The work carried out at the Research Laboratory at Kabete during the year was up to the usual standard of magnitude. On the research side some important observations were made. An experiment begun in 1932 on 1,180 cattle to determine the duration of immunity to *rinderpest* resulting from vaccination with inactivated (formalinised?) spleen pulp followed by active spleen virus 14 days later showed that after two years and five months immunity had persisted, but in a degree which varied according to the relative proportions of the inactivated vaccine and the virus used. The higher the former the greater was the blocking out effect on the reaction to the latter, and a reaction to the virus is said to be necessary for immunity production. In addition to artificial tests, some of these animals were exposed to a natural outbreak of rinderpest two years and nine months after vaccination, with the result that two out of 317 animals which had been immunised with 2 grammes of inactivated spleen pulp followed by 5 c.c. of extracted spleen virus developed a mild attack of the disease and out of 75 animals which received 3 grammes of pulp followed by 5 c.c. of extracted virus ten reacted severely.

A mouse-adapted neuro-virus obtained from South Africa was used as a vaccine against *horse sickness*, but it was too early to draw any conclusions as to its protective qualities against Kenya strains of the infection. Cell-inclusion bodies resembling those found in yellow fever of man have been seen in the livers and kidneys of horses dead of horse sickness. A publication on this finding as a means of diagnosing the disease is promised.

The infectious nature of *malignant catarrh* of cattle was further verified by experiments with a readily transmissible strain of the virus. Tests are being conducted to verify the suggestions of German workers that the virus of this disease is related to that of Borna disease.

During the year a widespread outbreak of *swine influenza* occurred in the colony. This is the first recorded occurrence of this disease in Africa.

Experiments on several other diseases are recorded.

W. K.

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Kirkcudbright

REPORT OF THE HEALTH AND SANITARY ADMINISTRATION OF THE STEWARTRY FOR THE YEAR 1935

The report is a comprehensive one extending to 99 pages and comprises the following sections: (*a*) General Sanitation; (*b*) Housing and Town Planning; (*c*) Food Supply; (*d*) Medical Services; (*e*) Port Sanitary Administration; and (*f*) Workshops and Workplaces; reports by Sanitary Inspectors; report by Veterinary Inspector.

Report of Veterinary Inspector

This report embraces (1) Diseases of Animals Acts; (2) Milk and Dairies Acts and Orders; and (3) Meat Inspection.

Diseases of Animals Acts

Foot-and-Mouth Disease.—No outbreak of this disease is reported for the year under review, but sheep were traced to a farm in the Stewartry which had come from Glasgow Market just prior to the outbreak in that city. No evidence of disease was found.

Anthrax.—One hundred and fourteen bovines, eight horses and five pigs were examined for anthrax, and this disease was found to be present in six cows, five bullocks and one heifer. Earth nut cake is quoted as being a possible source of infection.

Sheep Scab.—No fresh outbreak is reported for the year.

Parasitic Mange.—One case of suspected mange was reported but proved negative.

Tuberculosis Order of 1925.—Under this Order 385 bovines were examined as being suspect. Two hundred and forty-eight appeared to be suffering from the disease, and of these 160 were advanced and 88 not-advanced; 152 of these animals were reported by owners, nine by private practitioners, and 87 during dairy herd inspection. The total compensation paid was £888 13s. 4d., averaging £3 11s. 8d.

Milk and Dairies Acts and Orders

Milk and Dairies (Scotland) Act, 1914.—The assistance of a temporary Veterinary Inspector was obtained from January 1st to March 31st.

Three grade "A" (T.T.) herds became attested during the year.

The general bodily condition of the cow population is reported as being good, but a shortage of water was experienced during the summer months on several farms.

It is noted that registered dairies received only one annual inspection.

Of the 75 samples of milk examined in respect of tuberculosis, seven proved positive. Examination of bovine sputum yielded 33 positive to the microscopic examination for tubercle bacilli and 65 negative.

Six cows were subjected to the tuberculin test in order to assist diagnosis and two were found to react and were dealt with under the Tuberculosis Order.

Milk (Special Designations) Order (Scotland), 1930.—At the beginning of the period under review the total number of licences was 15: four certified and eleven grade "A" (T.T.). During the year one of the latter licences was withdrawn owing to the unsatisfactory result of tuberculin testing of the herd. Three new grade "A" (T.T.) licences were granted during the year. There are four retail licences in addition, *viz.*, two certified and two grade "A" (T.T.). Ninety-seven samples were taken from graded herds during the year for chemical and bacteriological examination.

Meat Inspection

There are three public slaughterhouses in the area and a few private slaughterhouses. The number of visits made to the public slaughterhouses totalled 347. A comprehensive list of the number of carcases and part carcases condemned is given.

Inspection of Markets

The report closes with the details of the weekly inspections of two main markets.

NATIONAL RADIUM TRUST

The National Radium Trust, in its seventh annual report for 1935-36, issued in conjunction with that of the Radium Commission, expresses anxiety over the increasing needs for radium of centres and hospitals all over the country. The Trust states that the views of the Radium Commission—the body of experts which administers the supply—as to the need for an increase of supplies, are receiving anxious consideration.

"It seems clear," the report adds, "that with the trend towards the use of larger units, the ultimate need over the next few years will be far beyond the financial resources of the Trust. For a time there appeared to be a prospect that the provision of a further large national stock of radium might form part of the national memorial to His late Majesty King George V, but the final decision of the Memorial Committee, reached after the end of the period under review was in favour of another charitable object."

R.C.V.S. COUNCIL MEETING

SUMMARY OF PROCEEDINGS

The Report of the Quarterly Meetings of the Council and committees of the R.C.V.S. will be published in our next issue; in the meantime, attention may be drawn to the following items of interest in the proceedings.

The Finance Committee approved of the scheme for enlarging the premises at 10, Red Lion Square, and their recommendation that the scheme be proceeded with was carried by the Council, though by the narrow majority of nine votes to eight. Estimates are to be obtained for carrying out the work, and these will be considered at the April meeting of Council.

In the very long report submitted by the Examination Committee the most interesting item is perhaps the appointment of the following as Examiners for the Final Examination under the Five Years' Course:—

For Medicine and Meat Inspection.—Messrs. Harold Burrow, S. J. Motton, and W. H. Wortley.

For Surgery and Obstetrics.—Messrs. T. N. Gold, A. A. Pryer, and one other to be appointed by the President.

The first Final Examination under the new scheme will be held in July next. The Syllabus is still under revision, however, for we note a decision to allow the subject of Animal Management to be taken as a separate subject at any time before the Third Examination.

It has been decided to hold an annual dinner this year on the evening of Thursday, April 8th, at which lady members will be entitled to attend, and to which lady guests may be invited. This, we think, is an innovation for a Royal College dinner. Further particulars will be announced later.

We are glad to learn that an official invitation has been addressed to the College to appoint a representative to attend the Coronation Ceremony on May 12th, and that the President, Mr. J. Willett, has been appointed to carry out this duty. Further gratification is afforded by the knowledge that His Majesty the King has intimated his pleasure to become Patron of the College, following the decision of his predecessor, King Edward VIII.

The Library Committee's report is given in fuller detail than usual, and this will give our readers a clearer idea of the extent of the services which the Library can render to members of the College. The committee has had a printed catalogue prepared at the request of a number of readers, and this has been on sale for the past six months, price 1s., post free. The fact that there has been little demand for it up to the present, however, is a source of some disappointment to the committee.

N.V.M.A. DIVISIONAL REPORTS

Southern Counties Veterinary Society*

MEETING AT SOUTHAMPTON

The winter meeting of this Society was held at the South-Western Hotel, Southampton, on Friday, December 11th, 1936, and after the routine business of the meeting had been disposed of Dr. L. Jordan, Ph.D., the Chief Veterinary Officer for West Sussex, contributed an interesting paper on "Some Aspects of the Double Intradermal Tuberculin Test," the subsequent discussion on which was opened by the President of the Society, Mr. J. F. D. Tutt, F.R.C.V.S. In addition to the President and Dr. Jordan, those present included Messrs. J. Facer, B. Gorton, E. S. Martin, W. F. Maynard, J. D. McLauchlan, K. G. Morgan, J. H. Ripley, J. B. White and H. S. Caldwell (Hon. Secretary), with Mr. J. B. Tutt and Mr. E. C. Morris as visitors.

The minutes of the last meeting, as published in the *Veterinary Record*, were taken as read and confirmed.

Obituary.—Reference was next made by Mr. Caldwell to the recent death of Mr. C. Pack, of Lymington. Mr. Pack was a very old member of their Society and, he believed, had filled the chair as well as acted as Hon. Secretary. He had sent a letter of sympathy and Mr. Ripley had represented them at the funeral.

The President, in inviting the members to stand for a moment in silence, also expressed their thanks to Mr. Ripley for attending the funeral on their behalf. Mr. Pack, he said, was a very well known practitioner and had done a lot of work for the Society in the past. They were all very sorry to hear of his death.

Correspondence.—(1) From Sir Frederick Hobday, Major S. Wallace, Mr. Wood, Miss Cust (who is going abroad for a few months), and Messrs. N. S. Barron, G. Warnock Begg, E. R. Harding, G. P. Male, W. A. Milligan, H. C. Rockett and F. J. Taylor apologising for their inability to attend the meeting.

(2) From the General Secretary of the N.V.M.A., with regard to the tuberculin testing of herds under the Milk (Special Designations) Order of 1936. In this letter, which had been addressed to Mr. Tutt, the Secretary of the Association wrote that the view expressed by the Southern Counties that such testing should be carried out by the general practitioner, if necessary under the supervision of the Chief Veterinary Officer of the county concerned, had the full support of the Veterinary Officers' and Public Health Committee of the N.V.M.A., and

*Received for publication January 4th, 1937.

the Association's representative urged the Ministry of Health to make a recommendation to local authorities accordingly when officials of that Department were interviewed. The reply which the deputation received was that the question would be one for local arrangement, and subsequently a similar attitude was taken up by the County Councils Association and the Association of Municipal Corporations. It had therefore been left to local practitioners to call for the help of the Association where it was proposed that this testing should be transferred to the whole-time officers of the county. The practitioners in two counties, Cheshire and Gloucestershire, had enlisted the services of the N.V.M.A. in opposing such a proposal and in each case the representations made by the N.V.M.A. to the County Council had been largely responsible for the Council deciding to utilise the services of the general practitioner; the Secretary of the N.V.M.A. understood that the practitioners concerned were satisfied with the arrangements so made for their participation in this work.

The President remarked that he had not heard anything further. They would remember he raised the point because he considered it was an important one to get settled, from the view of the general practitioner, but he did not see that anything further could be done that day.

(3) From the General Secretary, N.V.M.A., with reference to the courses of instruction in the precautions to be taken in the case of air raids and gas attacks, and which were being arranged by the local Divisions of the British Medical Association with the help of the Home Office. Mr. Caldwell informed the members that he had supplied the Secretary of the local Branch of the B.M.A. with the names and addresses of their members and they would no doubt be hearing from him in due course.

(4) From the Royal Sanitary Institute, inviting the Society to appoint a delegate or delegates to a Conference to be held in London on January 28th with a view to securing uniformity in the administering of the Accredited Scheme. It was unanimously agreed that this be left to the Secretary, who stated that he would secure additional tickets for any members who would like to attend the Conference.

(5) From the Royal Sanitary Institute, inviting the Society to appoint delegates to the annual Congress to be held at Birmingham next July. In introducing this, Mr. Caldwell said they had not appointed any delegates for the last few years, but he did not know whether they wished to be represented this year. Personally he did not think there was very much to be gained by their doing so, but it was for the members to decide. Moreover, the Congress in question came about the same time as the "National" Conference at Bournemouth.

The President: "Yes; the week before, I believe."

To test the feeling of the meeting, Mr. Caldwell proposed that no delegate be appointed this year, and this was seconded by Mr. J. B. White and agreed to.

Membership.—The election to membership of Major Wallace, of Salisbury, proposed by Captain Rockett and seconded by Mr. Warnock Begg, was unanimously confirmed. The President nominated Mr. Arnold Spicer and Mr. E. G. Morris for election at the next meeting.

N.V.M.A. Congress.—The question of holding an "At Home" in connection with the annual Congress of the N.V.M.A. at Bournemouth next July was next raised by the Hon. Secretary, who said he understood it was usual for those resident in the district where the Conference was held to organise some social gathering of this character to welcome the visiting members from other parts of the country. It was proposed that this should be held at the Royal Bath Hotel, and the only question seemed to be whether they should run it on their own account or whether it should be a joint affair between themselves and the other Societies in the south. Possibly Dr. Jordan, who was acting as Local Hon. Secretary for the Congress, could tell them what would be expected of them.

Dr. Jordan replied that he was afraid he could not help them very much that day, but he would get into touch with the Secretary of the Yorkshire Society and find out exactly what was done at Scarborough last year. Speaking for the Sussex Branch, of which he was also Secretary, he felt sure they would be very pleased to do anything they could to help.

The President thought it would be a great advantage if the Societies could combine.

Dr. Jordan said they really must have an "At Home" and that he also thought Mr. Tutt should be the host, seeing that the Southern Counties would really be the home of the Congress this year.

A proposition to this effect was then agreed to and Dr. Jordan undertook to make further inquiries as to what would be required and to report at the next meeting.

Next Meeting.—The venue of the next meeting, which will be the Annual Meeting, was discussed, and it was decided that this should be held at Salisbury on the first or second Friday in March, when Major Hamilton Kirk had promised to read a paper—possibly on clinical diagnoses in the dog or cat.

Paper.—Dr. Jordan next proceeded to read his paper on "Some Aspects of the Double Intradermal Tuberculin Test, with special reference to Synthetic Tuberculin." [This paper and a report of the ensuing discussion and of the essayist's reply, are reproduced at the commencement of this issue.—*Editor.*]

Benevolence.—The collecting box of the Victoria Veterinary Benevolent Fund was opened and it was agreed that the contents—£2—be sent to the Secretary of the Fund.

Vote of Thanks.—The President said it only remained for him to propose a very hearty vote of thanks to Dr. Jordan, which he had much pleasure in doing.

Mr. J. B. White seconded and the proposition was carried with acclamation.

The members then took tea together.

H. S. Caldwell, *Hon. Secretary.*

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North Midland V.M.A.*

ANNUAL GENERAL MEETING AT SHEFFIELD

The Annual General Meeting of the above Division was held at the King's Head Hotel, Change Alley, Sheffield, on December 8th, 1936.

The President, Mr. E. Marrison, occupied the chair and the following members were also present: Messrs. H. M. Salusbury, T. C. Fletcher, D. D. Canning, H. Thompson, F. C. Scott, R. Hudson, H. R. Laycock, F. H. Addison and A. D. J. Brennan.

Messrs. E. D. Jenkins, J. O. Powley, R. H. M. Coulton and R. S. Smyth were present as visitors.

The minutes of the last meeting were read.

Election of Officers

Officers for the ensuing year were elected as follows:—

President.—Mr. D. D. Canning.

Vice-Presidents.—Mr. E. Marrison and Mr. A. D. J. Brennan.

Council.—Messrs. W. Collinson, T. C. Fletcher, G. Green, R. Hudson, H. R. Laycock and S. H. Nixon.

Auditors.—Messrs. T. C. Fletcher and H. R. Laycock.

Hon. Secretary.—Mr. H. M. Salusbury.

Correspondence.—The Secretary read the correspondence. A special item was a letter from the General Secretary of the N.V.M.A. relating to the treatment of sick animals of poor people in Sheffield. A great deal of time was taken up in discussing this question in detail and it was resolved that the Secretary should attend a meeting of a sub-committee of the N.V.M.A., to be held in London on December 11th, 1936, with a view to obtaining the views of the sub-committee on the action best to be taken in Sheffield.

Papers.—Two papers were then read to the meeting: (*a*) by Mr. R. Hudson, F.R.C.V.S., Retford, and (*b*) by Mr. H. M. Salusbury, of Sheffield, on "A Consideration of Recent (*a*) Surgical and (*b*) Veterinary Public Health Work, with special reference to the Scarborough Congress."

The papers provided an interesting discussion.

A hearty vote of thanks was passed to Mr. E. Marrison, of Bakewell, for his conduct in the chair as President of the Society for the past two years.

The newly-elected President for the year 1937, Mr. D. D. Canning, of Doncaster, was suitably welcomed to the chair.

This concluded the meeting.

H. M. Salusbury, *Hon. Secretary.*

*Received for publication January 7th, 1937.

IN PARLIAMENT

LIVESTOCK INDUSTRY BILL*

Shortly after reassembling subsequent to the Christmas recess, Members of the House of Commons gave a second reading to the Livestock Industry Bill.

In moving, the Minister of Agriculture (Mr. W. S. Morrison) said that the House had already considered and approved one of the features of the Government's permanent proposals for safeguarding the livestock branch of the agricultural industry and had passed a resolution imposing a duty of ¾d. a pound on imports of foreign chilled beef and corresponding duties on other products.

The arrangements for setting up the International Beef Conference with a subsidiary Empire conference, of which the House had already been told, were very well advanced and he hoped to be able to make a very early announcement on that subject. The duty on beef and the regulation of imports to this market were very important features of the policy and the present Bill filled in the blanks of that policy and dealt more particularly with what he might call the domestic side of the livestock industry. That was to say that having done their best to clear the external position, they were now taking the corresponding measures to promote the efficiency and earning capacity of the industry inside the country itself.

Referring to the importance of the livestock industry, he said that its products accounted for three-quarters of the output of our farms, and beef alone was responsible for one-fifth of the farmers' interests, taking an average all over the country. Our stock was predominant in the world and the industry had been carried on with great success in the past and had reached a point where it was world-famous. It was, therefore, on that account alone deserving of sympathetic consideration. Another important aspect was that the population of livestock on the fields of the land were essential to the fertility of those fields and would enable them to meet extra demands in time of emergency. (Hear, hear.)

If the livestock producer were to carry on his business as he had carried it on in the past he must have some reasonable expectation that he could make a living out of it. Secondly, if the Government were to assist the industry from public funds they should give that assistance in a form which provided not only cash but encouragement towards better quality. That principle was embodied in the Bill. In

the third place, the House would expect that if public money were to be given to this industry the Government should combine with it proposals for more efficient marketing of the products of the industry, so as to ensure that the greatest possible assistance was given, not only by public funds, but by a reorganisation of the industry's own principles and markets.

With regard to the safeguarding of the meat market in this country, the Bill proposed the regulation of imports. They hoped that regulation would be effectively carried out by the producers themselves, but it was essential to provide against the contingency—which, he hoped, would not arise—that this method might not succeed. The Bill therefore provided that the Board of Trade should have the necessary power to regulate the quantities imported into our market. It was contrary to the public interest that there should be a state of affairs all over the world in which the products of the livestock industry were disposed of at grossly unremunerative prices. It was not only bad for the producers, but in the long run bad for the consumers, because the effect of a long spell of depression was always to reduce the output of the industry to a disastrous level from the consumer's point of view.

The method of trying to settle the matter by international co-operation was, he believed, the right one. It was not in the interests of this country that livestock production should be conducted at a loss in the Dominions, or even abroad, so long as we had trading interests with these foreign parts. It was to our interest if all producers could get together to ensure a reasonable reward for their toil. This international co-operation involved the free exchange of market intelligence, and they must try to build up an organisation on those lines which would produce harmony among the nations concerned. If this plan did not work there was power in the Bill for the Government to make the necessary recommendations.

A regulated meat market was, in the Government's view, the first essential, and they proposed to adopt these methods for ensuring that the market itself would be secure, so that they might go forward to build on that basis something of lasting good to the industry. It was just and proper that as they were allowing supplies to be maintained at reasonable levels they should make a contribution to make up the deficiency to the consumer which would result. It was essential that such proposals should take account of quality, and that there should be more encouragement for animals of high class than for the other sort. (Cheers.) As the Bill entrusted the management of the subsidy to a commission it would be premature for him to say what price figures were in view, but he hoped that it would be possible very shortly to issue a White Paper showing what the Government had in view in regard to the subsidy, so that members might approach the Bill in its later stages with a definite idea of what Ministers had in mind, although this would be provisional on the Commission's proposals.

The independent and non-representative commission would be charged to make proposals for the reorganisation of markets, and also with the supervision of schemes for central slaughter. He knew that some hon. members felt a little suspicious about the commission as a derogation from producers' control. Matters concerned with markets involved contact with local authorities and, it might be, power to over-ride certain ancient charters and private Acts, and slaughter involved vast problems of public health. It was in the interests of producers and of all concerned that these schemes should be entrusted, not to a producers' board but to an independent body armed with sufficient power to conduct this very important branch of the reform. The commission was practically the keystone of the policy. It would have a very important and continuous part to play in all long-term proposals for the development of the livestock industry.

It being granted that there was a necessity for assistance, the question was: What should that assistance be? The position of the cattle producers compared with that of farmers as a whole might be judged by the following figures: The general index number of agricultural prices

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*As previously noted in these columns, this important Bill provides for the establishment of a non-representative Livestock Commission, which will not only take over the duties of the present Cattle Committee in regard to the administration of subsidy payments to producers of fat cattle, but will have a wide range of functions in relation to the livestock industry as a whole. The Commission will be charged with the duty of keeping generally under review matters relating to the livestock industry and of advising and assisting Ministers in such matters, and they will have an important part to play in the development of measures designed to bring about increased efficiency in marketing and slaughtering. The Bill also provides for the constitution of an Advisory Committee, representative of all interests immediately connected with the industry, for the purpose of advising and assisting the Commission in the discharge of their functions. It is proposed, in substitution for the existing emergency provisions, that, as a permanent arrangement, sums up to five million pounds per annum should be made available for the payment of a subsidy to producers of fat cattle in the United Kingdom of such amounts or at such rates as the situation may from time to time require. As a precautionary measure, general powers will be sought to regulate imports of livestock and meat if it appears desirable in the general interest to do so in order to secure the stability of the market for meat in the United Kingdom.

Provisions designed to improve the system of livestock markets in Great Britain are contained in the Bill. It is proposed that, subject to certain exceptions, on and after August 1st, 1937, no premises in Great Britain other than premises on which a livestock market was formerly held at some time during the year ended on November 30th, 1936, shall be used for holding a livestock market unless the premises are approved for the purpose by the Livestock Commission. The Bill makes provision for three experiments in centralised slaughtering and for Exchequer assistance of £250,000 in all, of which not more than £150,000 may be by way of grant, towards the cost of carrying out such experiments. Provision is also made for the payment of compensation by the Commission to interests affected by a slaughterhouse scheme, and for the collection of contributions from the person carrying on the central slaughterhouse and from other interests concerned. It is proposed that the Livestock Commission shall be enabled to make and submit schemes, at the request of any substantially representative body in the industry, for the performance and financing of such services as the encouragement of research and education and of co-operation in matters affecting the livestock industry, and the insurance of livestock and the advertising of meat.

fell from December, 1929, to December, 1936, by 17 points, or by 13 points if allowance were made for the subsidy payments. Fat cattle prices fell in the same period by 39 points. This branch of the industry in recent years had suffered most severely from bad times.

A guaranteed price would be a difficult thing for the House to accept. It would be hard to ask the House to place on the Exchequer an unforeseen and unforeseeable liability. No policy for agriculture was really sound unless permanence was one of its essential features. Agriculture was an industry which moved with a biological rhythm, and they could not accelerate that rhythm as they could speed up the mass production of a motor car factory. Therefore agricultural policy must bring confidence to the producer. The arrangements for the subsidy could be varied from time to time by the Commission with the approval of Ministers, and it would not be necessary therefore to come to the House every time some minor alteration was proposed for further legislation. The sum of £5,000,000 was a maximum amount, however.

Cattle Markets and Slaughterhouses: A Process of "Rationalisation"

The redundancy of markets was a matter which inflicted damage on the producers. It was 90 years since the House had a Market Act, and in that 90 years vast revolutions had taken place. There had been the advent of the railway and then of the motor car and a great increase in communications, so that now fat-stock prices were announced on the radio. There were in Great Britain 1,100 markets handling some 25,000,000 head of livestock each year. The object of a market was to attract to one place a sufficient number of potential buyers so that there should exist healthy competition between those buyers to secure the product which the producer had. With small and redundant markets there was no real competition. Some of the markets did so little business that they were not properly equipped, and the equipment of a market was often a matter of vital importance to the producer.

The Commission would make recommendations dealing with the country area by area. Ample safeguards were provided. There was provision for compensation of interests adversely affected. The money for compensation would come out of levies made on those markets which as a consequence of the operation of an Order stood to benefit by the exclusion of a competitor. The important part of the Government's proposal was not the closing of markets but the improvement and re-equipment of the vast majority that would remain. The Commission was given power to deal comprehensively with equipment.

There were in this country about 13,000 private slaughterhouses and about 100 public abattoirs handling about a quarter of the total slaughterings. In Scotland 150 public abattoirs dealt with over 90 per cent. of the home-killed meat consumed. Too many slaughterhouses entailed uneconomic working and waste of valuable by-products. They must experiment and get at the facts. Therefore the proposals dealing with slaughtering were quite different from those relating to markets. Future policy in the matter of slaughtering could only be determined when they had the facts as a result of experiment, had had time to consider them, and had had time to frame their policy in accordance with the results shown.

The Commission would be continuously advised by an Advisory Committee representing all the interests affected by the proposals of the Bill and the House might rely on the machinery which was being set up bringing forward all local considerations. In the last resort all the schemes would have to be laid before the House and would be subject to a negative resolution. Everything possible had been devised to prevent injustice being done. The Government considered that anybody, whether a company, a local authority, or an individual, who engaged in this enterprise of conducting one of these three experimental slaughterhouses was conducting pioneer work of great value to the country.

For that reason they thought it right and proper that there should be power to assist this enterprise from public funds. A sum not exceeding £250,000 would be placed by the Exchequer at the disposal of the Commission to assist this enterprise. This sum did not come out of the Cattle Fund available for subsidy.

The compensation payable must vary according to the conditions of the locality where the slaughterhouse was intended to be erected. At the present moment he could not say where the experiments would be carried out; that depended very much on the Commission and they might be anywhere in Great Britain in large producing or consuming areas. It would require very careful judgment on the part of the Commission to get the best advantage of the proposal.

Money spent on assisting the livestock industry of this country went back into the capital resources of the country and improved the stock and the land. The land of this country was the possession of all the people. (Opposition laughter.) He was not dealing with the land in a narrow sense. The agricultural industry was a dynamic industry and conditions changed from year to year according to world events over which they had no control. They must seek modern methods best suited to modern conditions. He did not say that the Bill was the final embodiment of the wisdom of the Government or of man, but its operation would be to the lasting benefit of the agricultural industry, and that would be in the interests of everyone in the country.

Mr. T. Williams, from the Opposition Front Bench, gave a qualified approval to the marketing and slaughtering proposals but suggested that it would have been better, in such a speculative business as central slaughtering, if the experiments to be undertaken had been put entirely under Government direction and control. As for the rest of the Bill it was another example of piecemeal legislation which left the farmers' organisations disturbed and critical.

Sir E. Ruggles-Brise, the leading spokesman on these occasions of agricultural members supporting the Government, said that the Bill must be tested by its capacity to bridge the gap between livestock prices and costs of production. While prices were lower than before the War, costs had substantially increased, notably for labour and feeding stuffs. The additional subsidy of £1,500,000 was welcomed, but this and the reorganisation proposals together would not entirely bridge the gap.

Sir Francis Acland indicated that he and his fellow Liberals would vote for the second reading, although their vote on the third reading would depend on whether the Government met the various criticisms he had to make.

Captain Dixon, speaking "on behalf of the cattle raisers whom I represent in this House," observed that he could definitely say that they

welcomed the Bill because it showed that there was going to be some continuity of policy in the matter of beef. That would be of tremendous value to the stock-raiser. The man raising stock had to look forward to at least two years before he could sell a beast, and, therefore, it was essential that the Government should have some long-term policy. The Bill was divided into three sections—the section dealing with slaughtering, the section dealing with marketing, and the last and best section of all, the section which gave the man who had the fat beast a certain amount of money.

The first two of those sections were looked upon with a certain amount of suspicion by cattle-raisers. He thought he ought to say a word on the subject of slaughtering, because he had had personal experience of it in his own city of Belfast. Forty-two years ago the municipality took over the slaughtering of cattle within the city, and in 1899 they got further powers from that House which gave them absolute control over the slaughtering of cattle in the city of Belfast in public abattoirs. There was no room for doubt that that had been a success, and it had been a success for two or three reasons. One reason was that it was much more humane, because, when one had great numbers of cattle being slaughtered at the same place, it was much easier for those who looked after the humane slaughtering to see that it was done in a proper manner. A second great advantage of those public slaughterhouses was that they made it much easier to detect bad meat; and the third and greatest advantage, from the cattle raiser's point of view, was that people were given confidence that they were getting clean and good meat; the result was that they bought meat more freely. Therefore, having had experience of those public slaughterhouses, which had been in existence for many years in the city of Belfast, he could say definitely that at any rate stock breeders had no need at all to fear the public slaughterhouse.

Mr. Marshall informed the House that he was Chairman of a Markets' Committee which had built one of the finest abattoirs in the country: he spoke of Sheffield. He could remember the very arduous task of closing the private slaughterhouses there. They paid thousands of pounds in compensation for which there was not an atom of justification. A slaughterhouse that was in existence before 1890 might be one of the most dirty and filthy places in the town, but they had to pay very heavy compensation. If it was built in 1890 and was a licensed slaughterhouse, it could be closed without any compensation. It was possible for a slaughterer, or group of slaughterers or wholesalers to go outside the city into the boundary of some other local authority and build a small slaughterhouse and bring to nought the praiseworthy efforts of local authorities. The Minister could have given local authorities more powers. He could have made those compensation Clauses much easier for them to tackle. If that had been done, there would have been a different tale to tell so far as the consuming areas were concerned.

The sum provided in the Bill—£250,000—to make those three experiments was pitifully inadequate to meet the needs of the situation. It appeared to him that the Government had not visualised what they were up against. That sum would not provide the necessary building and equipment for one factory abattoir. The Sheffield abattoir cost well over £250,000 and the Liverpool abattoir probably over £500,000, and, even so, there was no centralised internal slaughter. If the Government thought they were going to introduce, especially inside the new building, centralised slaughter and the provision of all the services subsequent to slaughter, they had not grasped the subject. An abattoir should cover processes which dealt with skins, blood products, offals, and the rendering of those products into all kinds of saleable articles, and the production of fertilisers, and should provide adequate and full opportunities for the inspection of meat by the local authorities' inspectors. Unless that was contemplated by the Government, they had not sufficiently thought out the matter, and had not really made provision for the first thing in factory abattoirs.

How long were those experiments to last? Many local authorities in this country had been holding up matters for five years and dared not spend any capital because they had been waiting for the Government's long-term policy. That long-term policy had again provided for delay, and consequently local authorities would not be prepared to spend any money until they knew finally what those experiments brought forth. The Government had all the facts and material at their disposal, and they knew very well from long experience of various local authorities what the needs really were. They could have taken hold of one of those great public abattoirs, and, with a little expense, have turned it into a factory abattoir and have got their experiments over in a very short time. It appeared that the pressure of private interests had been so great that they had to contemplate setting up an abattoir run by a group of private enterprises.

The Bill introduced profit-making, which, he believed, was bad. Abattoirs to-day did not pay. He could not imagine any private enterprise being able to make them pay without putting up the price of meat to a very great extent. They must regard them as great public health services. They never paid a cash profit, but they were of benefit in the matter of public health, and gave services to the butchers at very low cost. The modern public abattoir gave lairage accommodation free, and they desired public inspection in order to see that animals were properly cared for while waiting to be slaughtered. In most public abattoirs they provided cooling rooms for the maturing of the meat, and the Government could not contemplate building those places without providing those modern conveniences.

Mr. Turton pointed out that the Chancellor of the Exchequer had said recently that the farmers were substantially better off than they had been. That was not true of the producers of livestock, who represented 70 per cent. of the produce of British farms. The fact was that the industry was in such a parlous condition that farmers were leaving the growing of fat stock and store stock for other branches of agriculture, and some part of the large exodus of agricultural workers from the land was due to the poor prices which were being obtained for fat stock in our markets.

What hope the industry had from this Bill must come from the subsidy, and the subsidy was insufficient to make the fat stock industry profitable. The emergency provisions had assisted the deterioration in the quality of meat because the subsidy had been at a flat rate. The Minister had said there was now to be a quality subsidy, but he must see that it was graded sufficiently high to encourage the production of good quality beef. To spread the subsidy as widely as possible would result in no improvement in quality. He regretted that the subsidy regulations were not to be decided by the House,

but were to be left to the Livestock Commission, and he hoped that at a later stage provisions would be inserted giving the House power, if necessary, to amend the regulations. However much they might criticise the Bill it was an improvement on the emergency legislation of the past two years. He would vote for the second reading, and endeavour to improve the Bill in the committee stage.

Mr. Alexander said it was quite clear that the National Farmers' Union had a dominating influence over the agricultural policy of this Government. The direct and indirect State assistance being given to agriculture amounted to about £40,000,000 a year. This was perhaps due to the dominating influence of a farmers' body, largely political, which stood over the Government with a reserve political fighting fund of £60,000. This Bill proposed to hand out more largesse. The Opposition were not against assisted measures of reorganisation and sympathetic treatment, if they could be justified. But there had been no real and authentic justification from the Government for the kind of assistance which they were actually going to give. The Opposition were opposed to the principle of giving to one section of the community unlimited grants without a means test, while severe restrictions were imposed on other members of the community.

Government Reply

Mr. Ramsbotham said that there had been expressed from the Opposition benches sympathetic interest in the welfare of beef producers, but having watched the political activities of Mr. Alexander and his friends, he was a little bit disappointed that they had given very little tangible evidence of their sympathy. The Government had provided assistance by subsidies, tariffs, and the regulation of imports, and the Opposition had voted against them all.

As to the supporters of the Government, it could not be said quite frankly that their support had been overburdened with caresses. (Laughter.) If his impression was correct there were, at any rate, a certain number who thought that the subsidy of £5,000,000 was not adequate. But it was possible, even probable, that the farmers were looking at this matter now from the trough of the wave. No one would be foolish enough to prophesy as to future prices. But £5,000,000 was admittedly a large sum, and it might prove extremely helpful to the agricultural industry. He would also remind his hon. friends that the taxpayer was concerned in this, and the taxpayer had many heavy burdens to bear at the moment, and it might be that the end was not yet. (Hear, hear.)

Stress had been laid on the need for ascertaining the cost of production. Attempts to ascertain this had been made by economists, but the data they had been able to collect were extremely limited. As every practical agriculturist knew, it was extremely difficult to separate beef production from other farm enterprise, and the difficulties in the way of obtaining anything in the nature of scientific figures were acute. The whole problem was so complicated that to postpone assistance until the cost of production had been ascertained would be playing with the situation as it existed to-day.

The keynote of this Bill was contained in words which constantly recurred in its clauses —efficiency and economy. He commended the Bill on its merits as an endeavour to remove obstacles in the way of progress and to reform methods of marketing and slaughtering which were uneconomic. The majority of farmers realised that if public money was to be spent the public had a right to an assurance that it would be spent as economically and efficiently as possible, and they would agree that the function of the Legislature was not primarily to provide them with financial assistance but to create conditions which would give full scope to their skill, judgment, and enterprise, realising that in the final resort success depended on the individual.

There might be some farmers who concentrated their attention on the money to be paid to them by the State and did not appreciate the immense value to their industry of reform of marketing and slaughtering and the benefits of co-operation rendered possible by the Bill. He seldom indulged in a Latin quotation; it was no longer fashionable. But he could not resist reminding such farmers of the well-known line from the Georgics of Virgil:—

O fortunatos nimium, sua si bona norint.

which he would translate: "How exceedingly blest would these farmers be if they only knew what was good for them." (Laughter and cheers.)

The Bill was read a second time and the money resolution in connection with the Bill was agreed to in committee.

. . . . . .

The following questions and answers have been recorded in the House of Commons recently:—

Export of Horses

Mr. Liddall asked the Minister of Agriculture what reports had been received by his Department during the last twelve months in respect of cruelty to horses exported to Belgium, Holland, and France; and what reports he had received on this matter from his inspectors.

Mr. W. S. Morrison: A number of letters have been received, but these have been of a general character. The usual regular reports have been received from inspectors on the condition of animals at the ports of embarkation and on the fittings of the vessels engaged in the transport of the animals. If any specific case of cruelty is brought to the attention of the Ministry it will be investigated.

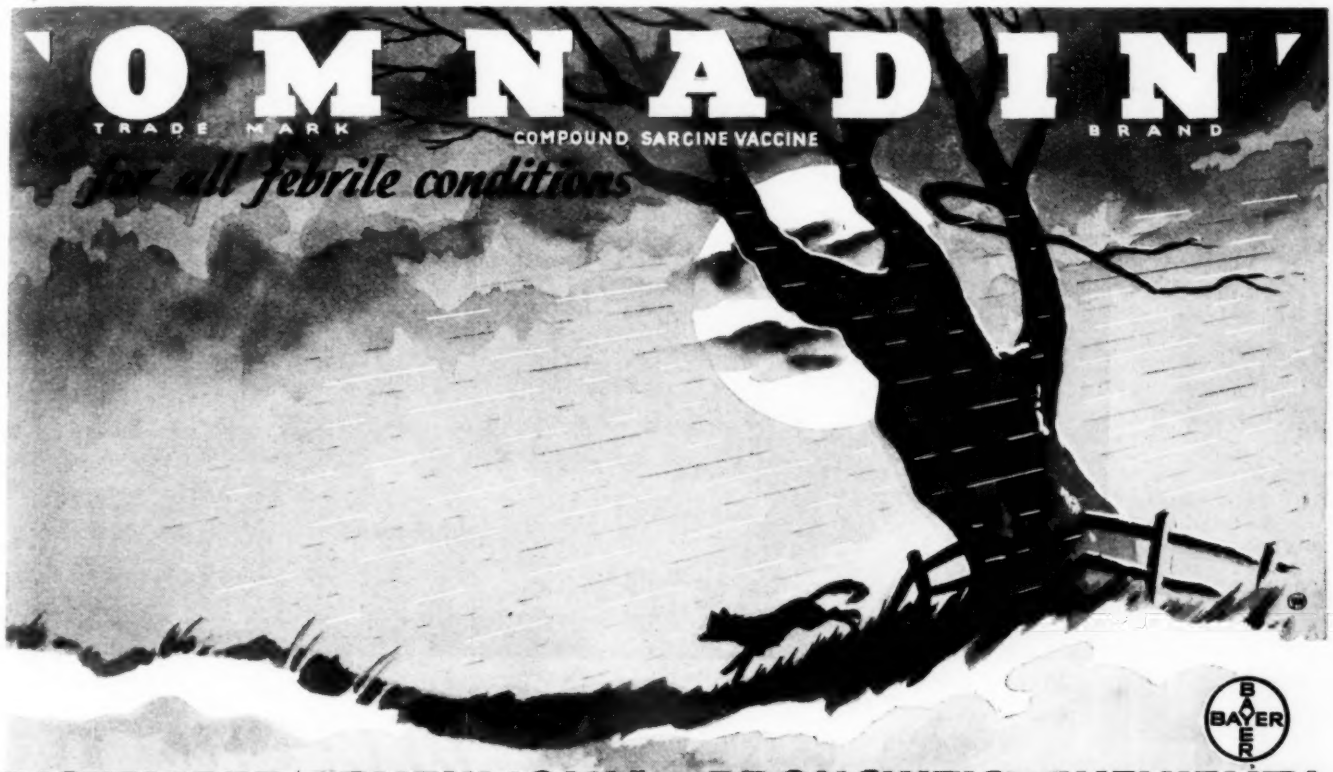
Sir W. Davison asked whether the right hon. gentleman had any reason to suppose that any infirm or worn-out horses were now exported to foreign parts for butchery or otherwise.

Mr. Morrison: No, Sir; the reports show that, on the whole, the regulations for the safe and humane treatment of these animals are being admirably observed.

Captain Heilgers asked whether there were any regulations for horses which were not sold for butchery but for private service.

Mr. Morrison said that the regulations applied to all animals, irrespective of the use to which they were put on arrival at the port of destination.

In answer to a further question by Mr. Liddall, Mr. Morrison said that he would circulate in the Official Report a statement showing the numbers and estimated values of horses shipped to Belgium, France, and Holland during the year 1936. (*See page* 133, *column* 1.)



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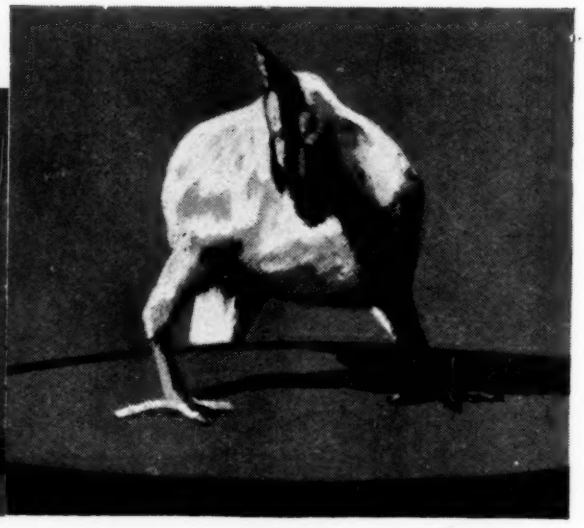

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Under £10	28	—	139	167
£10 and under £15 ...	12	—	16	28
£15 and under £20 ...	—	33	13	46
£20 and under £25 ...	—	8	10	18
£25 and under £30 ...	1	2	15	18
£30 and under £35 ...	—	—	11	11
£35 and under £40 ...	5	11	3	19
£40 and under £50 ...	34	—	29	63
£50 and over	137	291	309	737
	217	345	545	1,107

NOTE.—The information as regards values is given to the Ministry's Inspectors by the shippers.
Among the lower valued animals are included 156 Shetland ponies.

Notes and News

The Editor will be glad to receive items of professional interest for inclusion in these columns.

Diary of Events

Feb. 1st.—Meeting of the Editorial Committee, N.V.M.A., at 2, Verulam Buildings, Gray's Inn, W.C.1, 4 p.m.

Feb. 4th.—Voting Papers for R.C.V.S. Council Election issued to members abroad.

Feb. 4th.—Meeting of the Central Division, N.V.M.A., at the Conway Hall, Red Lion Square, W.C.1, 6.30 p.m.

Feb. 12th.—Meeting of the Derbyshire Division, N.V.M.A., at Sutton Bonington, Loughborough, 2.30 p.m.

Feb. 26th.—Annual Dinner and Dance of the Yorkshire Division, N.V.M.A., at Leeds.

Mar. 8th.—Royal Veterinary College, London, Annual Ball (in aid of the Re-Building Fund), Park Lane Hotel, W.1.

April 1st.—Annual Fees due to R.C.V.S.

April 5th.—Last day for applications for tickets for R.C.V.S. Annual Dinner.

April 7th.—R.C.V.S. Committee Meetings.

April 8th.—R.C.V.S. Committee Meetings.

April 9th.—R.C.V.S. Committee and Council Meetings.

May 6th.—Nominations for Election to R.C.V.S. Council due.

May 12th.—Coronation Day.

May 13th.—Entries for D.V.S.M. Examination due.

May 20th.—R.C.V.S. Voting Papers issued.

May 27th.—R.C.V.S. Voting Papers to be returned.

June 3rd.—R.C.V.S. Annual Meeting.
Victoria Veterinary Benevolent Fund Annual Meeting.

June 10th.—D.V.S.M. Written Examination begins.

June 14th.—D.V.S.M. Oral and Practical Examination begins.

June 23rd.—R.C.V.S. Committee Meetings.

June 24th.—R.C.V.S. Committee Meetings.

June 25th.—R.C.V.S. Committee and Council Meetings.

July 5th.—R.C.V.S. Written Examinations.

July 6th.—R.C.V.S. Written Examinations.

July 8th.—R.C.V.S. Oral Examination begins.

July 26th-30th.—N.V.M.A. Congress at Bournemouth.

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LEGAL NOTES

Farmer's Obstructive Attitude.—A South Bucks farmer who refused to keep his cows in the shed so that the County Veterinary Inspector could examine them was fined £5 at Great Missenden Police Court. He was Andrew Millard, of Manor Farm, Little Missenden, and he was summoned for failing to give reasonable assistance to the veterinary surgeon.

Mr. T. H. Jenks, prosecuting for the Bucks County Council, said the case was taken under the Milk and Dairies Consolidation Act, the object of which was to prevent the sale of diseased milk. It was particularly designed to prevent the sale of tuberculous milk.

Mr. Leon Howard, Clerk to the County Veterinary Officer, said that Millard telephoned to ask if the Inspector would alter his notified time of visiting, which was 10.30 a.m. If the Inspector called at that time the cows would not be in nor would he get them in.

Captain H. B. Collet, M.R.C.V.S., B.V.Sc., said he visited the farm on December 5th at 10.30 a.m., accompanied by an Inspector under the Milk and Dairies Acts. When he saw Millard he was told the cows were not in the sheds. "I am not going to keep them in for any veterinary inspector," stated the defendant, and added when Mr. Collet was leaving, "I would not be too keen on this scheme if I were you. It won't be to your advantage."

"The object of the visit," Mr. Collet told the court, "was to ensure that none of the cows had any disease which might be transmitted to humans."

Mr. A. E. Aldwinckle said he accompanied Mr. Collet to make a general inspection of the farm and to examine the identification marks on the herd.

Millard explained that he thought the visit was only in connection with a county council scheme, and not under any Act. "I did not know there was any compulsion to get the cows in and keep them in until noon," he said. "It means keeping the cows off the grass, keeping the sheds dirty, and the men idle. I have no opposition to officials, but I should be glad if a more satisfactory arrangement could be made. I believe this is the first case of its kind in the county," he added.

"The Bench take the view that your action was quite unreasonable," said the Chairman in imposing the fine mentioned.

Diseased Cattle Cases.—The opinion that defendant had been let down by his foreman was expressed by Sheffield magistrates when a West Riding farmer, who formerly held positions in Scotland as Vice-President of the Farmers' Union

of Scotland, member of the Board of Agriculture Panel of Arbitrators, and a county councillor, pleaded guilty to offences under the Tuberculosis Order, 1925.

It was stated that a cow which arrived at Sheffield Abattoir from his farm was found to be in a very advanced state of tuberculosis.

Defendant, Thomas Ross Evans (50), farmer, of Kiveton Hall Farm, who claimed to have done more than anyone else in the West Riding to stamp out tuberculosis among cattle, was fined £15 for failing to keep the cow isolated as far as practicable, and £5 for failing to give information to the police or to the local authority.

Prosecuting, Mr. J. W. Chant said that the animal was in such a state that it would never have passed through the abattoir for human consumption. It was isolated and destroyed at the abattoir.

Serious as it might be from the point of view of spreading disease amongst animals when the cow coughed, it was far more serious from the point of view of spreading tuberculosis among human beings.

After the defendant had been seen he subsequently wrote a letter to the Chief Veterinary Officer. This letter stated: "Had I been aware she (the cow) had become emaciated most certainly she would have been reported to Mr. Canning (West Riding veterinary surgeon), if only for the obvious reason that his authority removes her free of charge and gives some £1 10s. as 'compensation,' while certainly there is nothing to be gained by sending her to the abattoir, where there is close inspection. . . ; It was only by inadvertence that she was sent."

Mr. A. Ashton, who appeared for the defendant, said that the cow was sent to the abattoir by Evans's main foreman without the knowledge of Mr. Evans.

Mr. Ashton added that Evans had three farms, was a very experienced farmer, and was applying for a grade "A" licence. His application was at present under consideration, which indicated that he was a good type of dairyman.

. . . . .

"The Bench are willing to co-operate with the Guildford Corporation to see that this market is not used for selling cattle which are diseased, and, if necessary, we shall increase the penalties." This warning was given by the Chairman of the Guildford Borough Bench, when George Ford, of Old Poyle Farm, Colnbrook, Bucks, was summoned for causing a diseased cow to be brought to Guildford Market for sale or exposure for sale. Charles Frith, of 10, Southern Cottages, Stanwell Moor, near Staines, was summoned for bringing the cow into the market. Mr. P. E. Roberton prosecuted. Defendants pleaded not guilty.

Major R. J. Sargent, M.R.C.V.S., Borough Veterinary Surgeon, said the cow was in very poor condition, unhealthy in appearance, hidebound, with staring coat and subject to diarrhoea. There was a small swelling under the throat and an enlargement of the glands on both sides. He suspected tuberculosis and served the necessary forms. The cow was removed from the market and taken back.

Major W. H. Anderson, M.R.C.V.S., veterinary inspector under the Middlesex County Council, said he saw Ford two days after the return of the cow and examined the animal. The cow was in poor condition with a slight swelling under the jaw, and there was a good deal of emaciation. In his opinion the cow was suffering from tuberculosis. He saw Ford, who said the cow had lately been resting. He tested the cow for tuberculosis and the test showed that she had that disease. She was killed and the *post-mortem* showed that the cow was suffering from tuberculosis.

In cross-examination, he agreed that Ford might reasonably have thought that the cow's condition was due to bad calving.

Announcing the Bench's decision, Ald. Ellis said they thought the charge against Frith had been proved and he would be fined £1. They also thought the case against Ford had been proved and he would be fined £3 and £2 2s. costs. Ford had put forward a plea that it was not obvious that the cow was suffering from tuberculosis owing to the condition, which was due to calving. He did not think the Bench could accept that suggestion because it was evident that the cow was not in a fit and proper condition to be taken into a public market. They wanted Ford to realise that Guildford Market was not open for the exposure of cattle of that kind.

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TUBERCULIN TEST FOR IMPORTED CATTLE

At the December, 1936, meeting of the Council of Agriculture for England, consideration was given to the following report from the Standing Committee on the question of the Tuberculin Test for Imported Cattle:—

(1) At the last meeting of the Council (December 12th, 1935) a resolution, moved by Mr. D. G. Watkins (Hereford) to the effect that all cattle entering this country from foreign ports should be subjected to tuberculin testing, was referred to the Standing Committee for consideration and report.

(2) The position is that, apart from special consignments of pedigree cattle, the importation of cattle from countries outside Great Britain is either prohibited or confined to those animals intended for slaughter at the port of landing, except in the case of cattle from Canada, the Channel Islands and Ireland.

(3) So far as Canada is concerned, breeding cattle are always subjected to the tuberculin test before shipment: that is by Canadian Order. Cattle incapable of breeding are in most cases imported as fat for slaughter.

(4) As regards the Channel Islands, the Islands are free from tuberculosis.

(5) As regards Ireland, in 1935 there were 851,340 cattle imported, of which 213,440 only were fat, the remainder (637,900) being stores distributed to farms. Tuberculosis may be reckoned to be about as prevalent among cattle in Great Britain as it is in Ireland, and the limitation of imports to cattle from Ireland which had passed the test would reduce the available supply of store cattle below the needs of this country, and might raise the price of stores to a prohibitive figure. No compensating advantage could be looked for from such limitation because, in view of the prevalence of tuberculosis in this country, imported cattle, even if certified free from that disease on entry, might easily become infected again by contact with other cattle. There is the further point that a single tuberculin test could give no guarantee that the animal was free from disease. A second negative test, after an incubation period of at least 60 days *in isolation*, would be necessary to detect animals which were in the incubative stage

of tuberculosis. Apart, therefore, from the consideration that testing before entry would be likely to serve no useful purpose, its cost would probably be such as to make it commercially impracticable.

Professor A. W. Ashby having moved the adoption of the report, Mr. G. D. Watkins said that he was disappointed that a way could not be found of putting Irish cattle under the same conditions as Canadian. He thought it a disgrace seeing old cows from Ireland being sold in our markets from 7s. 6d. up to £5. He asked whether we were doing our best to provide purity and quality by allowing these cattle to come in, knowing that a big percentage were tuberculous and not subject to a single test. He would not ask for the double test.

Lord Cranworth maintained that it was a reproach to British agriculture to have so large a percentage of tuberculous cattle, and to endeavour to remove that reproach the Government had used moral persuasion and local sanction, and were spending public money to induce people to clean up their herds, but they were making practically no advance except in a few limited territories, mostly in Scotland. It was inconsistent with this policy to admit every year 350,000 animals without test, and conditions in Ireland might be worse than they were in this country. He admitted that a false sense of immunity might follow if these animals were tested, because many of them would be reinfected again, but the making of the test would prevent, at least, numbers of animals coming to this country which were known to be infected, and would show the public that it was not only lip service being given to the doctrine of eradicating the disease.

Sir Merrik Burrell said that no one was more anxious to see the eradication of tuberculosis from herds than he was. The incidence of the disease in our own cattle was something like 40 per cent., and the greater part of it amongst the older cows. The cattle coming from Ireland was not old cows, they were chiefly young bulls and heifers, and the incidence in the cows would, he thought, be much less than 40 per cent. If we were to insist that all animals had to be tested before they were sold on the market, he could not see how that could be supported in argument with the Irish Governments, especially when home-bred cattle were not to be likewise tested. Cattle tested once could not be given a certificate as safe cattle. They would, in fact, have a false certificate which would give people buying them a feeling of security they had no right to have. It was not difficult to enforce certification for the comparatively few cattle coming from Canada, but it would be impossible in the case of those coming from Ireland. They would have to be held some little time at the lairages, which might become infected and spread the disease. He therefore disagreed with the two previous speakers. Mr. Watkins then proposed that the report be again referred back, and that pregnant cows and cows in milk should be subject to a test.

Mr. A. Matthews seconded that proposition. Professor Ashby said that he thought Mr. Watkins was rather confusing two things. There was in his mind the question of a clinical examination of cows, especially old cows, which might disclose the existence of tuberculosis. On that point there could not possibly be any difference between him and any member of the Council or Standing Committee. The committee would certainly agree that, in any case, where tuberculous infection was discovered by clinical examination the animals ought to be excluded. There was, however, a different problem with the 300,000 or so maiden heifers coming from Ireland. A test would have to be made in Ireland, and who could rely upon decisions made on this vast number of cattle scattered up and down the farms of Ireland. There was another point, that, if such a test could be carried out and the heifers later imported on the certificate, there would be a premium placed on their value far in excess of any to which they had a right. When the country was ready for a general attack on the problem of bovine tuberculosis, then a test on all imported cattle could be required. The most practical work being done to-day in the direction of achieving freedom from the disease was in trying to discover areas which are relatively free, cleaning them up absolutely and keeping them free. There were two such districts in Wales, and in a year or two it would be possible to supply from them heifers guaranteed free from disease. When districts were cleaned, Irish or any other untested cattle would be excluded from them. He asked the Council to accept the report with a rider to the committee to pursue the consideration of the most practical methods of obtaining freedom of the herds of the country from tuberculosis.

Mr. Watkins and his seconder agreed, and the report was adopted.

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LEVERHULME RESEARCH FELLOWSHIPS, 1937

Application is invited for (*i*) Fellowships and (*ii*) Grants in aid of research. The Fellowships are intended primarily to provide for senior workers a period of freedom from routine duties during which they may undertake or complete researches which are being delayed through the pressure of other work. The Grants are intended to provide for senior workers, who may not require release from their ordinary duties, such assistance as may be necessary to enable them to expedite or complete their work. Neither Fellowships nor Grants are awarded to graduates doing research with the object of obtaining higher degrees. Applicants must be British born and normally resident in the United Kingdom. In exceptional circumstances the Trustees may waive the condition as to residence.

The duration of the Grants will not normally extend over less than three months or more than two years, and the amount will depend on the nature of the research and the circumstances of the applicant. Any subject which may add to human knowledge may be proposed for a Fellowship, but preference is given to subjects in which other provision for research is inadequate.

Forms of application may be obtained from the Secretary, Dr. L. Haden Guest, Leverhulme Research Fellowships, Union House, St. Martins-le-Grand, London, E.C.1. Applications must be received on or before March 1st, 1937. Awards will be announced in July, and the Fellowships or Grants will date from September 1st, 1937.

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ARMY VETERINARY SERVICE

Appointments in India

The *London Gazette*, of January 27th, contains the announcement that the following officers have assumed appointments in India:—

Brevet Lieut.-Colonel G. A. Kelly, as Assistant Director of Veterinary Services, Western Command; Major S. O'Donel, M.C., as Commandant, Army Veterinary School, Ambala.

WARBLE FLY ORDER OBSERVANCE

"Inquiries with a view to ascertaining whether the Warble Fly Order has been properly observed have been made by the Wiltshire Agricultural Committee and the Diseases of Animals Committees in Berkshire, Gloucestershire, Somerset, Hampshire, Dorset, Devon and Cornwall. None appears to be certain that the Order has been thoroughly complied with," states the *Farmers' Weekly.*

"Cornwall proposes this year to tighten up the administration. Gloucestershire Committee have drawn the attention of the Ministry of Agriculture to the fact that considerable infestation of warble fly has been detected among cattle imported from Ireland. They suggest that the alternative to dressing—squeezing out the ripe maggots from diseased cattle—should be revoked. In both Somerset and Hampshire it is proposed to draw attention each year to the provisions of the Order before the beginning of the dressing season. Dorset Agricultural Committee have suggested to the Ministry that local authorities should be given powers to make regulations requiring notifications of date and time of dressings in a similar manner to that which applies in connection with the sheep dipping regulations. Wiltshire Committee have decided to advertise the provisions of the Order each February."

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THE PEOPLE'S LEAGUE OF HEALTH

In support of a large-scale scheme to improve health, a national appeal will be launched by the People's League of Health on April 15th. Speaking at a luncheon held recently at the Savoy Hotel, Lord Leverhulme, Chairman of this first national appeal, said the league was founded in 1917 by Miss Olga Nethersole, its hon. organiser. Its underlying principle was to prevent disease, wastage, and suffering by removing their causes, which could be roughly classified as ignorance on the part of the individual and the conditions of environment and nutrition.

The league had the help of no fewer than 83 medical men and women, 17 scientists, 13 veterinarians, and a lay council on which 39 organisations were represented. Describing the work of the league, he mentioned the recent inquiry into tuberculosis of bovine origin and the present work to carry out a survey of crippledom throughout the country. Although many schoolchildren were receiving protected milk, 357,990 were receiving milk which by no admitted standards could be classed as safe from the risk of conveying disease. A plan to eradicate tuberculosis from dairy herds, and an inquiry into maternal mortality and morbidity, which established that some of the ills attending pregnancy could be attributed to certain deficiencies in diet, were part of a large-scale scheme being initiated with the co-operation of hospitals.

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SHEEP DIPPING REGULATIONS

Dumfriesshire farmers and Cumberland auctioneers met at Carlisle to hear from Mr. R. Simpson, F.R.C.V.S., D.V.S.M., Chief Veterinary Officer for Cumberland, the result of a deputation to the Ministry to urge a modification of double dipping regulations between the two counties.

The Ministry, said Mr. Simpson, could not entertain a proposal to amend these measures at present.

It was decided to ask headquarters of the English and Scottish Farmers' Unions to co-operate in an effort to get the Ministry to hold an inquiry into sheep dipping regulations throughout the country.

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SHIRE HORSE SHOW

An excellent entry has been received for the fifty-sixth annual spring show of the Shire Horse Society, which is to be held at the Royal Agricultural Hall, Islington, under the Presidency of Mr. C. Barker, on Tuesday, February 2nd, and the two following days. There will be 21 classes, for which the prizes will aggregate £1,701. Of the total, £684 will be given for stallions, £537 for mares and fillies, £325 for geldings, etc., and £155 for commercial horses. In addition a premium of £250 will be given by the Board of Agriculture for the Isle of Man for a registered shire stallion over two years old to serve mares in the Isle of Man during the 1938 season. The champion cups will include the King's Cup, presented by the late King George V, for the best shire stallion in the show; a gold challenge cup, value 100 guineas, presented by the late Mr. G. R. C. Foster, also for the best stallion; a gold challenge cup, value 50 guineas, for the best mare or filly; and another, value £50, presented by Mrs. Stanton for the best gelding.

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HUNTER AND PONY SHOWS

The fifty-third annual spring show of the Hunters' Improvement and National Light Horse Breeding Society, of which Lord Middleton is President, will be held at the Royal Agricultural Hall, Islington, N., on Tuesday, March 9th, and the two following days.

Grants by the War Office and the Racecourse Betting Control Board have enabled the Society to offer an aggregate of £10,325 in premiums for thoroughbred stallions not under four or over 20 years old to travel prescribed districts in England, Scotland, and Wales. The champion stallion will hold the King George V Challenge Cup for a year. The prize schedule for the hunter section of the show has a total of £875. The Edward Prince of Wales Champion Challenge Cup will be given to the best young hunter in the show. Entries for the young hunter and thoroughbred stallion classes will close on Monday, February 1st; for the riding classes on February 8th; and for the jumping competitions on the evenings before they take place.

The thirty-eighth annual spring show of the National Pony Society, which is to be held in conjunction with the Arab Horse Society, will take place in the Royal Agricultural Hall, Islington, N., on Friday and Saturday, March 12th and 13th. The prize schedule, which contains details of 56 classes, has an aggregate value of approximately £1,240. Among the champion cups offered are the Silver Challenge Trophy, presented by Mr. Herbert Bright and family for the best polo pony filly three years old and under; the Howard Taylor Challenge Cup, for the best entire colt not over three years old; a perpetual challenge cup, value £50, for the best polo-bred mare or filly, presented by the British Pony and Galloway Racing Association; the *Country Life* Challenge Trophy for the best polo-bred stallion or colt; the *Country Life* Challenge Cup for the best polo pony in the riding classes; two challenge cups for Arabs; and cups for Welsh mountain and mountain moorland ponies.

The entry list is now closed, except at double fees, when they will be received until February 1st. In the children's riding classes and equitation tests, however, entries will close on Monday, March 1st, while for the competitions and jumping they may be made up to 6 o'clock on the evening before they are held.

The National Pony Society have issued their annual supplement to Volume XXII of the National Pony Stud Book. It contains an entry of 55 young ponies, the highest number since 1931. Of these 16 are out of mares in the Society's approved mare register. In addition to the 55 entries there is a separate section known as the Young Stock Register, in which are entered nine colts and seven fillies that do not fully comply with the supplement conditions but are polo-bred and eligible to compete in the polo-bred classes at the Society's London show.

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MODERN VIEWS ON INFECTION AND DISINFECTION

A Chadwick lecture delivered by Sir Weldon Dalrymple-Champneys at the Mansion House, London, on December 9th, 1936, is summarised in *Nature* (December 19th) as follows:—

"Microbial diseases, Sir Weldon said, can be defined as a disturbance of health in man or other living things due to the presence of parasitic organisms, as a disturbance of the equilibrium between host and parasite unfavourable to the host. The reactions of any host to the presence of pathogenic organisms are numerous and complex, but are not mutually exclusive. Thus, the parasite may be rapidly killed by defensive mechanisms of the host's body, without giving rise to any symptoms of disease, or it may cause a local reaction known as inflammation. Fever is also a common result of infection, and tends to be a protective mechanism. Sir Weldon dwelt on the fact that a 'carrier state' may be established either following illness with apparent recovery without complete destruction of the invading parasite, or in consequence of a 'silent' infection without actual disease.

"The manner in which infecting parasites gain access to the body was then dealt with, the two commonest portals of entry being the skin and the nose and mouth. Infection may enter through the nose or mouth by the inhalation of infected droplets in the breath of patients or carriers, as with measles, influenza and others, or by swallowing infected food or drink, as in cholera and typhoid fever. The importance of the carrier state as a cause of cases or epidemics of infectious diseases was emphasised, and reference was made to the fact that different diseases may be caused by the same organism. For example, scarlet fever, tonsillitis, puerperal fever and probably acute rheumatism, are all caused by various haemolytic streptococci. In conclusion, Sir Weldon discussed measures of disinfection and prevention, and in regard to 'current' and 'terminal' disinfection, pointed out that treatment of infective material in the sick room during the patient's presence there ('current disinfection') is all that is necessary with most diseases. 'Terminal disinfection' after recovery or removal of the patient, upon which until recent years most reliance has been placed, is needless, and may be confined to the free use of soap and water with thorough ventilation."

Correspondence

Letters to the Editor should reach the Office not later than by the first post on Tuesday morning for insertion in following Saturday's issue.

All correspondence must bear the name and address of the contributor for publication.

The views expressed in letters addressed to the Editor represent the personal view of the writer only and must not be taken as expressing the opinion or having received the approval of the N.V.M.A.

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MORTALITY AMONGST PIGS—CAUSATION SURVEY

To the Editor of the Veterinary Record

Sir,—Mr. J. Smith's advertisement on behalf of the Agricultural Research Council is likely to bring general practitioners into conflict with the Ministry of Agriculture, because they and their clients *must* report swine fever or *suspected* swine fever to the police. I say suspected, because there are so many conditions found in swine, especially in the early or virus stage, which simulate so many other diseases, *i.e.*, pneumonia, stomach and bowel conditions, etc. These conditions (where many pigs are affected, and especially young pigs) as the disease becomes more chronic, prove to be swine fever, as anyone who is employed on swine fever work soon finds out. In many cases, especially in the early haemorrhagic stages of the disease, many visits have to be paid, and it rests with the Ministry's veterinary officers to give the final decision as to whether or not the disease is swine fever.

If private practitioners undertake to send information to Mr. Smith, and if to give emphasis to that information, they also forward viscera, I can foresee trouble, and possibly police court proceedings ahead for them.

Swine fever, *and all that that term implies*, is "a scheduled disease, and material for research is not available to the ordinary laboratory or field worker."

From their second report it appears that the Agricultural Research Council are pursuing three lines of research into pig diseases at the present time.

First Line.—Swine Fever, Necrotic Enteritis and Similar Diseases of Pigs (the word "similar" justifies my meaning).

"The Council decided that, since swine fever was a notifiable disease, this work should be done at Weybridge, and that the workers should aim at developing methods of differential diagnosis, employing *serological* methods, and finding a small animal technique, and a way of active immunisation."

(*Serological methods of diagnosis.* In 1935 two Russian workers carried out precipitation tests in artificially induced swine fever. Their reagents were (*a*) urine of infected pigs, dialysed and filtered; (*b*) serum of rabbits which had been inoculated with urine of infected pigs. This method gave positive results in all experimentally infected pigs, and negative results in pig paratyphoid. This work was confirmed and extended by Krassow, who studied both naturally and artificially infected pigs. Here is a method of diagnosis, which, if its practical application proves successful, will be eminently suitable for diagnosing swine fever, as urine can readily be obtained. The technique is easy and results appear to be specific—and it can easily be carried out.) But I am digressing.

Second Line.—Swine Erysipelas. This work was to be carried out at the Institute of Animal Pathology, Cambridge. A grant of £400 from

the Council's funds was made in 1934. It was decided to employ Mr. G. J. G. Halford, who was on the staff of the Institute, for this work, but Mr. Halford left Cambridge and it appears that little work has as yet been done.

Third Line.—To investigate the Causes of the Deaths of Young Pigs over England and Scotland, and that a "peripatetic" veterinarian be appointed on a temporary basis to carry out the survey. This survey was entrusted to Mr. N. H. Brooksbank and *is progressing actively.* (The italics are mine.)

Apart from swine fever, there are some 40 other diseases (including those of young pigs) or conditions described in detail in standard literature from acne to trichinosis.

All this appears to me to be "flogging a dead horse"—repetition after repetition of investigations which have been carried out and have been decided years ago. One would think that these diseases were new ones (I am now referring to the third line of research) whereas the general practitioner is "up against" them continually. He knows only too well that most of them are due to overcrowding and bad hygiene and unless this can be remedied these diseases will always be with us, and, if pigs could be treated at the rate of "one farthing a dozen" some progress might be made. Pigs and poultry come into the same category.

Yours faithfully,
J. W. Hall Masheter.

Ruddle House.
Newnham-on-Severn.
January 10th, 1937.

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To the Editor of the Veterinary Record

Sir,—Thank you for your courtesy in letting me see Mr. Hall Masheter's letter. I fear that I have not made myself plain in the notice I asked you to insert. I have simply agreed to endeavour to obtain information which will supplement that being obtained by Mr. Brooksbank and which will allow the Agricultural Research Council to decide whether there are any further problems, in connection with diseases of pigs, which require investigation. Information regarding what may be called the major diseases, is, of course, in the knowledge of the Ministry and there is no suggestion of usurping the functions of the Government Department.

Yours faithfully,
J. Smith.

Kenley,
Surrey.

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"Anatomie Régionale des Animaux Domestiques"

To the Editor of the Veterinary Record

Sir,—I am delighted to see your notice of a second edition of the "Anatomie Régionale des Animaux Domestiques" whose first edition, 1913, by Montané and Bourdelle has been such a great help to me in my teaching.

It is obvious that your reviewer is not acquainted with the work: the generalities in the first edition follow closely those to be found in such works as those of Chauveau, Arloing-Lesbre, etc.: the French mind, I suppose, requiring a very thorough foundation to be laid. I hope that opportunity will be taken in this series to publish the work on the Carnivora, the MSS. of which M. Bourdelle showed me 14 years ago. The volumes of the first edition on Ruminants and the Pig fill a gap not supplied in English. The illustrations are quite good and the use made of them in the text is, as far as I know, unique. The numbered legends run down the sides of the cut with a line and a plain dot indicating the structure. The full work is perhaps too extensive for a student, but is one of my most treasured teaching instruments.

Yours, etc.,
A. W. Whitehouse (*Principal*).

Glasgow Veterinary College,
83, Buccleuch Street,
Glasgow, C.3.
January 18th, 1937.

Diseases of Animals Acts

SUMMARY OF RETURNS

Period.	Anthrax.		Foot-and-Mouth Disease.		Parasitic§ Mange.		Sheep Scab.	Swine Fever.	
	Outbreaks confirmed.	Animals attacked.	Outbreaks confirmed.	Animals slaughtered as diseased or exposed to infection.	Outbreaks reported by the Local Authorities.	Animals attacked.	Outbreaks confirmed.	Outbreaks confirmed.	Swine slaughtered.
	No.	No.	No.	No.	No.	No.	No.	No.	No.
Period 1st to 15th January, 1937	29	33	1	59	8	8	38	49	17
Corresponding period in									
1936	26	27	2	342	9	14	40	107	59
1935	18	19	1	80	15	22	46	63	24
1934	12	12	—	—	14	25	87	63	27

Note.—The figures for the current year are approximate only.

§ Excluding outbreaks in Army Horses.